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(Original Signature of Member)

108TH CONGRESS
1ST SESSION

H. R. _____

IN THE HOUSE OF REPRESENTATIVES

Mr. BOEHLERT introduced the following bill; which was referred to the
Committee on _____

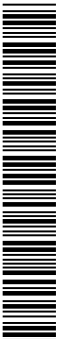
A BILL

To provide for Federal energy research, development, demonstration, and commercial application activities, and for other purposes.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

3 **SECTION 1. SHORT TITLE.**

4 This Act may be cited as the “Energy Research, De-
5 velopment, Demonstration, and Commercial Application
6 Act of 2003”.



1 **TITLE I—RESEARCH AND**
2 **DEVELOPMENT**

3 **SEC. 101. PURPOSES.**

4 The purposes of this title are to—

5 (1) contribute to a national energy strategy
6 through an energy research and development pro-
7 gram that supports basic energy research and pro-
8 vides mechanisms to develop, demonstrate, and pro-
9 mote the commercial application of new energy tech-
10 nologies in partnership with industry;

11 (2) protect and strengthen the Nation's econ-
12 omy, standard of living, and national security by re-
13 ducing dependence on imported energy;

14 (3) meet future needs for energy services at the
15 lowest total cost to the Nation, giving balanced and
16 comprehensive consideration to technologies that im-
17 prove the efficiency of energy end uses and that en-
18 hance energy supply;

19 (4) reduce the environmental impacts of energy
20 production, distribution, transportation, and use;

21 (5) help increase domestic production of energy,
22 increase the availability of hydrocarbon reserves, and
23 lower energy prices; and



1 (6) stimulate economic growth and enhance the
2 ability of United States companies to compete in fu-
3 ture markets for advanced energy technologies.

4 **SEC. 102. GOALS.**

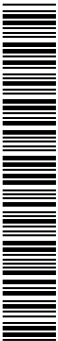
5 (a) IN GENERAL.—In order to achieve the purposes
6 of this title, the Secretary shall conduct a balanced set
7 of programs of energy research, development, demonstra-
8 tion, and commercial application, guided by the following
9 goals:

10 (1) ENERGY EFFICIENCY.—

11 (A) BUILDINGS.—Develop, in partnership
12 with industry, technologies, designs, and pro-
13 duction methods that will enable an average 25
14 percent increase by 2010 in the energy effi-
15 ciency of all new buildings, as compared to a
16 new building in 1996.

17 (B) INDUSTRY.—Develop, in partnership
18 with industry, technologies, designs, and pro-
19 duction methods that will enable the energy in-
20 tensity of the major energy-consuming indus-
21 tries to improve by at least 25 percent by 2010
22 as compared to 1991.

23 (C) VEHICLES.—Develop, in partnership
24 with industry, technologies that will enable—



1 (i) by 2010, mid-sized passenger auto-
2 mobiles with a fuel economy of 80 miles
3 per gallon;

4 (ii) by 2010, light trucks (classes 1
5 and 2a) with a fuel economy of 60 miles
6 per gallon;

7 (iii) by 2010, medium trucks and
8 buses (classes 2b through 6 and class 8
9 transit buses) with a fuel economy, in ton-
10 miles per gallon for trucks and passenger
11 miles per gallon for buses, that is 3 times
12 that of year 2000 equivalent vehicles;

13 (iv) by 2010, heavy trucks (classes 7
14 and 8) with a fuel economy, in ton-miles
15 per gallon, that is 2 times that of year
16 2000 equivalent vehicles; and

17 (v) by 2015, mid-sized fuel cell pow-
18 ered passenger vehicles with a gasoline
19 equivalent fuel economy of 110 miles per
20 gallon.

21 (2) DISTRIBUTED ENERGY AND ELECTRIC EN-
22 ERGY SYSTEMS.—

23 (A) DISTRIBUTED GENERATION.—Develop,
24 in partnership with industry, technologies based
25 on natural gas that achieve electricity gener-



1 ating efficiencies greater than 40 percent by
2 2015 for on-site, or distributed, generation
3 technologies.

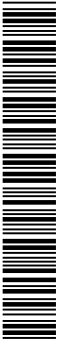
4 (B) ELECTRIC ENERGY SYSTEMS AND
5 STORAGE.—Develop, in partnership with
6 industry—

7 (i) technologies for generators and
8 transmission, distribution, and storage sys-
9 tems that combine high capacity with high
10 efficiency (particularly for electric trans-
11 mission facilities in rural and remote
12 areas);

13 (ii) new transmission and distribution
14 technologies, including flexible alternating
15 current transmission systems, composite
16 conductor materials, advanced protection
17 devices, and controllers;

18 (iii) technologies for interconnection
19 of distributed energy resources with elec-
20 tric power systems;

21 (iv) high-temperature superconducting
22 materials for power delivery equipment
23 such as transmission and distribution ca-
24 bles, transformers, and generators; and



1 (v) real-time transmission and dis-
2 tribution system control technologies that
3 provide for continual exchange of informa-
4 tion between generation, transmission, dis-
5 tribution, and end-user facilities.

6 (3) RENEWABLE ENERGY.—

7 (A) WIND POWER.—Develop, in partner-
8 ship with industry, technologies and designs
9 that will—

10 (i) reduce the cost of wind power by
11 40 percent by 2007 as compared to 2000;
12 and

13 (ii) expand utilization of class 3 and 4
14 winds.

15 (B) PHOTOVOLTAICS.—Develop, in part-
16 nership with industry, total photovoltaic sys-
17 tems with installed costs of \$4000 per peak kil-
18 owatt by 2005 and \$2000 per peak kilowatt by
19 2015.

20 (C) SOLAR THERMAL ELECTRIC SYS-
21 TEMS.—Develop, in partnership with industry,
22 solar power technologies (including baseload
23 solar power) that combine high-efficiency and
24 high-temperature receivers with advanced ther-



1 mal storage and power cycles to accommodate
2 peak loads and reduce lifecycle costs.

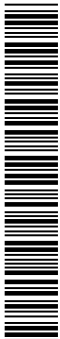
3 (D) GEOTHERMAL ENERGY.—Develop, in
4 partnership with industry, technologies and
5 processes based on advanced hydrothermal sys-
6 tems and advanced heat and power systems, in-
7 cluding geothermal or ground source heat pump
8 technology, with a specific focus on—

9 (i) improving exploration and charac-
10 terization technology to increase the prob-
11 ability of drilling successful wells from 20
12 percent to 40 percent by 2006;

13 (ii) reducing the cost of drilling by
14 2008 to an average cost of \$150 per foot;
15 and

16 (iii) developing enhanced geothermal
17 systems technology with the potential to
18 double the usable geothermal resource
19 base, as compared to the date of enact-
20 ment of this Act.

21 (E) HYDROGEN.—Carry out the Spark M.
22 Matsunaga Hydrogen Research, Development,
23 and Demonstration Act of 1990 and title II of
24 the Hydrogen Future Act of 1996, as amended
25 by this Act.



1 (F) BIOMASS-BASED POWER SYSTEMS.—

2 Develop, in partnership with industry, inte-
3 grated power generating systems, advanced con-
4 version, and feedstock technologies capable of
5 producing electric power that is cost-competitive
6 with fossil-fuel generated electricity by 2010,
7 through co-production of fuels, chemicals, and
8 other products under subparagraph (G).

9 (G) BIOFUELS.—Develop, in partnership
10 with industry, new and emerging technologies
11 and biotechnology processes capable of
12 making—

13 (i) gaseous and liquid biofuels that
14 are price-competitive, by 2010, with gaso-
15 line or diesel in either internal combustion
16 engines or fuel cells; and

17 (ii) biofuels, biobased polymers, and
18 chemicals, including those derived from
19 lignocellulosic feedstock, with particular
20 emphasis on developing biorefineries that
21 use enzyme-based processing systems.

22 (H) HYDROPOWER.—Develop, in partner-
23 ship with industry, a new generation of turbine
24 technologies that will increase generating capac-



1 ity and be less damaging to fish and aquatic
2 ecosystems.

3 (4) FOSSIL ENERGY.—

4 (A) POWER GENERATION.—Develop, in
5 partnership with industry, technologies, includ-
6 ing precombustion technologies, by 2015 with
7 the capability of realizing—

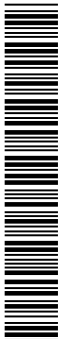
8 (i) electricity generating efficiencies of
9 75 percent (lower heating value) for nat-
10 ural gas; and

11 (ii) widespread commercial application
12 of combined heat and power with thermal
13 efficiencies of more than 85 percent (high-
14 er heating value).

15 (B) OFFSHORE OIL AND GAS RE-
16 SOURCES.—Develop, in partnership with indus-
17 try, technologies to—

18 (i) extract methane hydrates in coast-
19 al waters of the United States; and

20 (ii) develop natural gas and oil re-
21 serves in the ultra-deepwater of the Cen-
22 tral and Western Gulf of Mexico, with a
23 focus on improving, while lowering costs
24 and reducing environmental impacts, the
25 safety and efficiency of—



1 (I) the recovery of ultra-deep-
2 water resources; and

3 (II) sub-sea production tech-
4 nology used for such recovery.

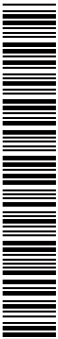
5 (C) ONSHORE OIL AND GAS RESOURCES.—
6 Advance the science and technology available to
7 domestic onshore petroleum producers, particu-
8 larly independent producers of oil or gas,
9 through—

10 (i) advances in technology for explo-
11 ration and production of domestic petro-
12 leum resources, particularly those not ac-
13 cessible with current technology;

14 (ii) improvement in the ability to ex-
15 tract hydrocarbons (including heavy oil)
16 from known reservoirs and classes of res-
17 ervoirs; and

18 (iii) development of technologies and
19 practices that reduce the impact on the en-
20 vironment from petroleum exploration and
21 production.

22 (D) TRANSPORTATION FUELS.—Increase
23 the availability of transportation fuels by focus-
24 ing research on—



1 (i) reducing the cost of producing
2 transportation fuels from coal and natural
3 gas; and

4 (ii) indirect liquefaction of coal and
5 biomass.

6 (5) NUCLEAR ENERGY.—

7 (A) EXISTING REACTORS.—Support re-
8 search to extend the lifetimes of existing United
9 States nuclear power reactors, and increase
10 their reliability while optimizing their current
11 operations for greater efficiencies.

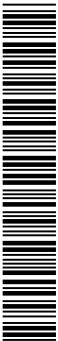
12 (B) ADVANCED REACTORS.—Develop, in
13 partnership with industry—

14 (i) advanced, efficient, lower cost, and
15 passively safe reactor designs;

16 (ii) proliferation-resistant and high-
17 burn-up nuclear fuels; and

18 (iii) technologies to minimize genera-
19 tion of radioactive materials and improve
20 the management of nuclear waste.

21 (C) NUCLEAR SCIENTISTS AND ENGI-
22 NEERS.—Attract new students and faculty to
23 the nuclear sciences, nuclear engineering, and
24 related fields (including health physics, nuclear



1 medicine, nuclear chemistry, and
2 radiochemistry).

3 (b) REVIEW AND ASSESSMENT OF GOALS.—

4 (1) EVALUATION AND MODIFICATION.—Based
5 on amounts appropriated and developments in
6 science and technology, the Secretary shall evaluate
7 the goals set forth in subsection (a) at least once
8 every 5 years, and shall report to the Congress any
9 proposed modifications to the goals.

10 (2) CONSULTATION.—In evaluating and pro-
11 posing modifications to the goals as provided in
12 paragraph (1), the Secretary shall solicit public
13 input.

14 (3) PUBLIC COMMENT.—(A) After consultation
15 under paragraph (2), the Secretary shall publish in
16 the Federal Register a set of draft modifications to
17 the goals for public comment.

18 (B) Not later than 60 days after the date of
19 publication of draft modifications under subpara-
20 graph (A), and after consideration of any public
21 comments received, the Secretary shall publish the
22 final modifications, including a summary of the pub-
23 lic comments received, in the Federal Register.

24 (4) EFFECTIVE DATE.—No modification to
25 goals under this section shall take effect before the



1 date which is 5 years after the date of enactment of
2 this Act.

3 (c) EFFECT OF GOALS.—(1) Nothing in paragraphs
4 (1) through (5) of subsection (a), or any subsequent modi-
5 fication to the goals therein pursuant to subsection (b),
6 shall—

7 (A) create any new—

8 (i) authority for any Federal agency; or

9 (ii) requirement for any other person;

10 (B) be used by a Federal agency to support the
11 establishment of regulatory standards or regulatory
12 requirements; or

13 (C) alter the authority of the Secretary to make
14 grants or other awards.

15 (2) Nothing in this subsection shall be construed to
16 limit the authority of the Secretary to impose conditions
17 on grants or other awards based on the goals in subsection
18 (a) or any subsequent modification thereto.

19 **SEC. 103. DEFINITIONS.**

20 For purposes of this title:

21 (1) DEPARTMENT.—The term “Department”
22 means the Department of Energy.

23 (2) DEPARTMENTAL MISSION.—The term “de-
24 partmental mission” means any of the functions
25 vested in the Secretary of Energy by the Depart-



1 ment of Energy Organization Act (42 U.S.C. 7101
2 et seq.) or other law.

3 (3) INDEPENDENT PRODUCER OF OIL OR
4 GAS.—

5 (A) IN GENERAL.—The term “independent
6 producer of oil or gas” means any person who
7 produces oil or gas other than a person to
8 whom subsection (c) of section 613A of the In-
9 ternal Revenue Code of 1986 does not apply by
10 reason of paragraph (2) (relating to certain re-
11 tailers) or paragraph (4) (relating to certain re-
12 finers) of section 613A(d) of such Code.

13 (B) RULES FOR APPLYING PARAGRAPHS (2)
14 AND (4) OF SECTION 613A(d).—For purposes of
15 subparagraph (A), paragraphs (2) and (4) of
16 section 613A(d) of the Internal Revenue Code
17 of 1986 shall be applied by substituting “cal-
18 endar year” for “taxable year” each place it ap-
19 pears in such paragraphs.

20 (4) INSTITUTION OF HIGHER EDUCATION.—The
21 term “institution of higher education” has the
22 meaning given that term in section 101(a) of the
23 Higher Education Act of 1965 (20 U.S.C. 1001(a)).

24 (5) JOINT VENTURE.—The term “joint ven-
25 ture” has the meaning given that term under section



1 2 of the National Cooperative Research and Produc-
2 tion Act of 1993 (15 U.S.C. 4301).

3 (6) NATIONAL LABORATORY.—The term “Na-
4 tional Laboratory” means any of the following lab-
5 oratories owned by the Department:

6 (A) Ames National Laboratory.

7 (B) Argonne National Laboratory.

8 (C) Brookhaven National Laboratory.

9 (D) Fermi National Laboratory.

10 (E) Idaho National Engineering and Envi-
11 ronmental Laboratory.

12 (F) Lawrence Berkeley National Labora-
13 tory.

14 (G) Lawrence Livermore National Labora-
15 tory.

16 (H) Los Alamos National Laboratory.

17 (I) National Energy Technology Labora-
18 tory.

19 (J) National Renewable Energy Labora-
20 tory.

21 (K) Oak Ridge National Laboratory.

22 (L) Pacific Northwest National Labora-
23 tory.

24 (M) Princeton Plasma Physics Laboratory.

25 (N) Sandia National Laboratories.



1 (O) Thomas Jefferson National Accel-
2 erator Facility.

3 (7) NONMILITARY ENERGY LABORATORY.—The
4 term “nonmilitary energy laboratory” means any of
5 the following laboratories of the Department:

6 (A) Ames National Laboratory.

7 (B) Argonne National Laboratory.

8 (C) Brookhaven National Laboratory.

9 (D) Fermi National Laboratory.

10 (E) Lawrence Berkeley National Labora-
11 tory.

12 (F) Oak Ridge National Laboratory.

13 (G) Pacific Northwest National Labora-
14 tory.

15 (H) Princeton Plasma Physics Laboratory.

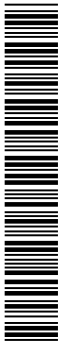
16 (I) Stanford Linear Accelerator Center.

17 (J) Thomas Jefferson National Accelerator
18 Facility.

19 (8) SECRETARY.—The term “Secretary” means
20 the Secretary of Energy.

21 (9) SINGLE-PURPOSE RESEARCH FACILITY.—
22 The term “single-purpose research facility” means
23 any of the following primarily single-purpose entities
24 owned by the Department:

25 (A) East Tennessee Technology Park.



1 (B) Environmental Measurement Labora-
2 tory.

3 (C) Fernald Environmental Management
4 Project.

5 (D) Kansas City Plant.

6 (E) Nevada Test Site.

7 (F) New Brunswick Laboratory.

8 (G) Pantex Weapons Facility.

9 (H) Savannah River Technology Center.

10 (I) Stanford Linear Accelerator Center.

11 (J) Y-12 facility at Oak Ridge National
12 Laboratory.

13 (K) Waste Isolation Pilot Plant.

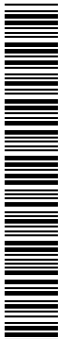
14 (L) Any other similar organization of the
15 Department designated by the Secretary that
16 engages in technology transfer, partnering, or
17 licensing activities.

18 **Subtitle A—Energy Efficiency**

19 **PART 1—AUTHORIZATION OF APPROPRIATIONS**

20 **SEC. 104. ENERGY EFFICIENCY.**

21 (a) IN GENERAL.—The following sums are author-
22 ized to be appropriated to the Secretary for energy effi-
23 ciency and conservation research, development, dem-
24 onstration, and commercial application activities, includ-
25 ing activities authorized under this subtitle:



1 (1) For fiscal year 2003, \$560,000,000.

2 (2) For fiscal year 2004, \$616,000,000.

3 (3) For fiscal year 2005, \$695,000,000.

4 (4) For fiscal year 2006, \$772,000,000.

5 (5) For fiscal year 2007, \$865,000,000.

6 (b) ALLOCATIONS.—From amounts authorized under
7 subsection (a), the following sums are authorized:

8 (1) LIGHTING SYSTEMS.—For activities under
9 section 105, \$10,000,000 for fiscal year 2003 and
10 \$50,000,000 for each of fiscal years 2004 through
11 2007.

12 (2) SECONDARY ELECTRIC VEHICLE BATTERY
13 USE PROGRAM.—For activities under section 108—

14 (A) for fiscal year 2003, \$1,000,000;

15 (B) for fiscal year 2004, \$4,000,000;

16 (C) for fiscal year 2005, \$7,000,000;

17 (D) for fiscal year 2006, \$7,000,000; and

18 (E) for fiscal year 2007, \$7,000,000.

19 (3) ENERGY EFFICIENCY SCIENCE INITIA-
20 TIVE.—For activities under section 110—

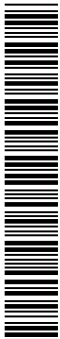
21 (A) for fiscal year 2003, \$15,000,000;

22 (B) for fiscal year 2004, \$20,000,000;

23 (C) for fiscal year 2005, \$25,000,000;

24 (D) for fiscal year 2006, \$30,000,000; and

25 (E) for fiscal year 2007, \$35,000,000.



1 (c) EXTENDED AUTHORIZATION.—There are author-
2 ized to be appropriated to the Secretary for activities
3 under section 105, \$50,000,000 for each of fiscal years
4 2008 through 2012.

5 (d) LIMITS ON USE OF FUNDS.—None of the funds
6 authorized to be appropriated under this section may be
7 used for—

8 (1) the promulgation and implementation of en-
9 ergy efficiency regulations;

10 (2) the Weatherization Assistance Program
11 under part A of title IV of the Energy Conservation
12 and Production Act;

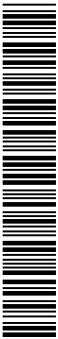
13 (3) the State Energy Program under part D of
14 title III of the Energy Policy and Conservation Act;
15 or

16 (4) the Federal Energy Management Program
17 under part 3 of title V of the National Energy Con-
18 servation Policy Act.

19 **PART 2—LIGHTING SYSTEMS**

20 **SEC. 105. NEXT GENERATION LIGHTING INITIATIVE.**

21 (a) IN GENERAL.—The Secretary shall carry out a
22 Next Generation Lighting Initiative in accordance with
23 this section to support research, development, demonstra-
24 tion, and commercial application activities related to ad-



1 vanced solid-state lighting technologies based on white
2 light emitting diodes.

3 (b) OBJECTIVES.—The objectives of the initiative
4 shall be—

5 (1) to develop, by 2012, advanced solid-state
6 lighting technologies based on white light emitting
7 diodes that, compared to incandescent and fluores-
8 cent lighting technologies, are—

9 (A) longer lasting;

10 (B) more energy-efficient; and

11 (C) cost-competitive;

12 (2) to develop an inorganic white light emitting
13 diode that has an efficiency of 160 lumens per watt
14 and a 10-year lifetime; and

15 (3) to develop an organic white light emitting
16 diode with an efficiency of 100 lumens per watt with
17 a 5-year lifetime that—

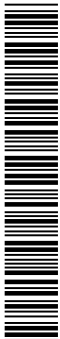
18 (A) illuminates over a full color spectrum;

19 (B) covers large areas over flexible sur-
20 faces; and

21 (C) does not contain harmful pollutants,
22 such as mercury, typical of fluorescent lamps.

23 (c) FUNDAMENTAL RESEARCH.—

24 (1) CONSORTIUM.—The Secretary shall carry
25 out the fundamental research activities of the Next



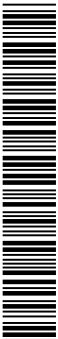
1 Generation Lighting Initiative through a private
2 consortium (which may include private firms, trade
3 associations and institutions of higher education),
4 which the Secretary shall select through a competi-
5 tive process. Each proposed consortium shall submit
6 to the Secretary such information as the Secretary
7 may require, including a program plan agreed to by
8 all participants of the consortium.

9 (2) JOINT VENTURE.—The consortium shall be
10 structured as a joint venture among the participants
11 of the consortium. The Secretary shall serve on the
12 governing council of the consortium.

13 (3) ELIGIBILITY.—To be eligible to be selected
14 as the consortium under paragraph (1), an applicant
15 must be broadly representative of United States
16 solid-state lighting research, development, and man-
17 ufacturing expertise as a whole.

18 (4) GRANTS.—(A) The Secretary shall award
19 grants for fundamental research to the consortium,
20 which the consortium may disburse to researchers,
21 including those who are not participants of the con-
22 sortium.

23 (B) To receive a grant, the consortium must
24 provide a description to the Secretary of the pro-



1 posed research and list the parties that will receive
2 funding.

3 (C) Grants shall be matched by the consortium
4 pursuant to section 182.

5 (5) NATIONAL LABORATORIES.—National Lab-
6 oratories may participate in the research described
7 in this section, and may receive funds from the con-
8 sortium.

9 (6) INTELLECTUAL PROPERTY.—Participants in
10 the consortium and the Federal Government shall
11 have royalty-free nonexclusive rights to use intellec-
12 tual property derived from research funded pursuant
13 to this subsection.

14 (d) DEVELOPMENT, DEMONSTRATION, AND COM-
15 Mercial APPLICATION.—The Secretary shall carry out
16 the development, demonstration, and commercial applica-
17 tion activities of the Next Generation Lighting Initiative
18 through awards to private firms, trade associations, and
19 institutions of higher education. In selecting awardees, the
20 Secretary may give preference to members of the consor-
21 tium selected pursuant to subsection (c).

22 (e) PLANS AND ASSESSMENTS.—(1) The consortium
23 shall formulate an annual operating plan which shall in-
24 clude research priorities, technical milestones, and plans



1 for technology transfer, and which shall be subject to ap-
2 proval by the Secretary.

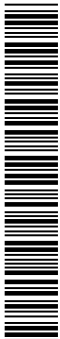
3 (2) The Secretary shall enter into an arrangement
4 with the National Academy of Sciences to conduct periodic
5 reviews of the Next Generation Lighting Initiative. The
6 Academy shall review the research priorities, technical
7 milestones, and plans for technology transfer established
8 under paragraph (1) and evaluate the progress toward
9 achieving them. The Secretary shall consider the results
10 of such reviews in evaluating the plans submitted under
11 paragraph (1).

12 (f) AUDIT.—The Secretary shall retain an inde-
13 pendent, commercial auditor to perform an audit of the
14 consortium to determine the extent to which the funds au-
15 thorized by this section have been expended in a manner
16 consistent with the purposes of this section. The auditor
17 shall transmit a report annually to the Secretary, who
18 shall transmit the report to the Congress, along with a
19 plan to remedy any deficiencies cited in the report.

20 (g) SUNSET.—The Next Generation Lighting Initia-
21 tive shall terminate no later than September 30, 2013.

22 (h) DEFINITIONS.—As used in this section:

23 (1) ADVANCED SOLID-STATE LIGHTING.—The
24 term “advanced solid-state lighting” means a
25 semiconducting device package and delivery system



1 that produces white light using externally applied
2 voltage.

3 (2) FUNDAMENTAL RESEARCH.—The term
4 “fundamental research” includes basic research on
5 both solid-state materials and manufacturing proc-
6 esses.

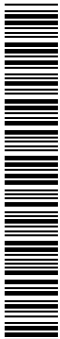
7 (3) INORGANIC WHITE LIGHT EMITTING
8 DIODE.—The term “inorganic white light emitting
9 diode” means an inorganic semiconducting package
10 that produces white light using externally applied
11 voltage.

12 (4) ORGANIC WHITE LIGHT EMITTING DIODE.—
13 The term “organic white light emitting diode”
14 means an organic semiconducting compound that
15 produces white light using externally applied voltage.

16 **PART 3—BUILDINGS**

17 **SEC. 106. NATIONAL BUILDING PERFORMANCE INITIATIVE.**

18 (a) INTERAGENCY GROUP.—Not later than 3 months
19 after the date of enactment of this Act, the Director of
20 the Office of Science and Technology Policy shall establish
21 an interagency group to develop, in coordination with the
22 advisory committee established under subsection (e), a
23 National Building Performance Initiative (in this section
24 referred to as the “Initiative”). The interagency group
25 shall be cochaired by appropriate officials of the Depart-



1 ment and the Department of Commerce, who shall jointly
2 arrange for the provision of necessary administrative sup-
3 port to the group.

4 (b) INTEGRATION OF EFFORTS.—The Initiative shall
5 integrate Federal, State, and voluntary private sector ef-
6 forts to reduce the costs of construction, operation, main-
7 tenance, and renovation of commercial, industrial, institu-
8 tional, and residential buildings.

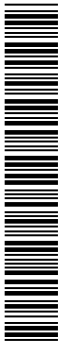
9 (c) PLAN.—Not later than 1 year after the date of
10 enactment of this Act, the interagency group shall submit
11 to Congress a plan for carrying out the appropriate Fed-
12 eral role in the Initiative. The plan shall include—

13 (1) research, development, demonstration, and
14 commercial application of systems and materials for
15 new construction and retrofit relating to the building
16 envelope and building system components; and

17 (2) the collection, analysis, and dissemination of
18 research results and other pertinent information on
19 enhancing building performance to industry, govern-
20 ment entities, and the public.

21 (d) DEPARTMENT OF ENERGY ROLE.—Within the
22 Federal portion of the Initiative, the Department shall be
23 the lead agency for all aspects of building performance re-
24 lated to use and conservation of energy.

25 (e) ADVISORY COMMITTEE.—



1 (1) ESTABLISHMENT.—The Director of the Of-
2 fice of Science and Technology Policy shall establish
3 an advisory committee to—

4 (A) analyze and provide recommendations
5 on potential private sector roles and participa-
6 tion in the Initiative; and

7 (B) review and provide recommendations
8 on the plan described in subsection (c).

9 (2) MEMBERSHIP.—Membership of the advisory
10 committee shall include representatives with a broad
11 range of appropriate expertise, including expertise
12 in—

13 (A) building research and technology;

14 (B) architecture, engineering, and building
15 materials and systems; and

16 (C) the residential, commercial, and indus-
17 trial sectors of the construction industry.

18 (f) CONSTRUCTION.—Nothing in this section provides
19 any Federal agency with new authority to regulate build-
20 ing performance.

21 **PART 4—VEHICLES**

22 **SEC. 107. DEFINITIONS.**

23 For purposes of this part, the term—

24 (1) “battery” means an energy storage device
25 that previously has been used to provide motive



1 power in a vehicle powered in whole or in part by
2 electricity; and

3 (2) “associated equipment” means equipment
4 located where the batteries will be used that is nec-
5 essary to enable the use of the energy stored in the
6 batteries.

7 **SEC. 108. ESTABLISHMENT OF SECONDARY ELECTRIC VE-**
8 **HICLE BATTERY USE PROGRAM.**

9 (a) PROGRAM.—The Secretary shall establish and
10 conduct a research, development, demonstration, and com-
11 mercial application program for the secondary use of bat-
12 teries. Such program shall be—

13 (1) designed to demonstrate the use of batteries
14 in secondary application, including utility and com-
15 mercial power storage and power quality;

16 (2) structured to evaluate the performance, in-
17 cluding useful service life and costs, of such bat-
18 teries in field operations, and evaluate the necessary
19 supporting infrastructure, including reuse and dis-
20 posal of batteries; and

21 (3) coordinated with ongoing secondary battery
22 use programs at the National Laboratories and in
23 industry.

24 (b) SOLICITATION.—(1) Not later than 6 months
25 after the date of the enactment of this Act, the Secretary



1 shall solicit proposals to demonstrate the secondary use
2 of batteries and associated equipment and supporting in-
3 frastructure in geographic locations throughout the
4 United States. The Secretary may make additional solici-
5 tations for proposals if the Secretary determines that such
6 solicitations are necessary to carry out this section.

7 (2)(A) Proposals submitted in response to a solici-
8 tion under this section shall include—

9 (i) a description of the project, including the
10 batteries to be used in the project, the proposed lo-
11 cations and applications for the batteries, the num-
12 ber of batteries to be demonstrated, and the type,
13 characteristics, and estimated life-cycle costs of the
14 batteries compared to other energy storage devices
15 currently used;

16 (ii) the contribution, if any, of State or local
17 governments and other persons to the demonstration
18 project;

19 (iii) the type of associated equipment and sup-
20 porting infrastructure to be demonstrated; and

21 (iv) any other information the Secretary con-
22 siders appropriate.

23 (B) If the proposal includes a lease arrangement, the
24 proposal shall indicate the terms of such lease arrange-
25 ment for the batteries and associated equipment.



1 (c) SELECTION OF PROPOSALS.—(1)(A) The Sec-
2 retary shall, not later than 3 months after the closing date
3 established by the Secretary for receipt of proposals under
4 subsection (b), select at least 5 proposals to receive finan-
5 cial assistance under this section.

6 (B) No one project selected under this section shall
7 receive more than 25 percent of the funds authorized
8 under this section. No more than 3 projects selected under
9 this section shall demonstrate the same battery type.

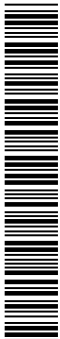
10 (2) In selecting a proposal under this section, the
11 Secretary shall consider—

12 (A) the ability of the proposer to acquire the
13 batteries and associated equipment and to success-
14 fully manage and conduct the demonstration project,
15 including satisfying the reporting requirements set
16 forth in paragraph (3)(B);

17 (B) the geographic and climatic diversity of the
18 projects selected;

19 (C) the long-term technical and competitive via-
20 bility of the batteries to be used in the project and
21 of the original manufacturer of such batteries;

22 (D) the suitability of the batteries for their in-
23 tended uses;



1 (E) the technical performance of the batteries,
2 including the expected additional useful life and the
3 batteries' ability to retain energy;

4 (F) the environmental effects of the use of and
5 disposal of the batteries proposed to be used in the
6 project selected;

7 (G) the extent of involvement of State or local
8 government and other persons in the demonstration
9 project and whether such involvement will—

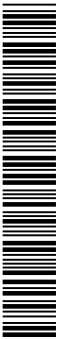
10 (i) permit a reduction of the Federal cost
11 share per project; or

12 (ii) otherwise be used to allow the Federal
13 contribution to be provided to demonstrate a
14 greater number of batteries; and

15 (H) such other criteria as the Secretary con-
16 siders appropriate.

17 (3) CONDITIONS.—The Secretary shall require that—

18 (A) as a part of a demonstration project, the
19 users of the batteries provide to the proposer infor-
20 mation regarding the operation, maintenance, per-
21 formance, and use of the batteries, and the proposer
22 provide such information to the battery manufac-
23 turer, for 3 years after the beginning of the dem-
24 onstration project;



1 (B) the proposer provide to the Secretary such
2 information regarding the operation, maintenance,
3 performance, and use of the batteries as the Sec-
4 retary may request;

5 (C) the proposer provide to the Secretary such
6 information regarding the disposal of the batteries
7 as the Secretary may require to ensure that the pro-
8 poser disposes of the batteries in accordance with
9 applicable law; and

10 (D) the proposer provide at least 50 percent of
11 the costs associated with the proposal.

12 **SEC. 109. ADVANCED VEHICLE TECHNOLOGY.**

13 The Secretary shall expand research and development
14 programs of the Department related to advanced vehicle
15 technologies, including—

16 (1) fuel cells, including high temperature mem-
17 branes for fuel cells and fuel cell auxiliary power
18 systems, and hydrogen storage;

19 (2) vehicle engine systems and emission control
20 systems;

21 (3) batteries and power electronics for hybrid
22 vehicles;

23 (4) combustion and after-treatment technologies
24 for use in direct injected gasoline and diesel fueled
25 motor vehicles; and



1 (5) other advanced fuels and materials.

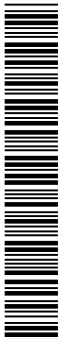
2 **PART 5—ENERGY EFFICIENCY SCIENCE**

3 **INITIATIVE**

4 **SEC. 110. ENERGY EFFICIENCY SCIENCE INITIATIVE.**

5 (a) ESTABLISHMENT.—The Secretary shall establish
6 an Energy Efficiency Science Initiative to be managed by
7 the Assistant Secretary in the Department with responsi-
8 bility for energy conservation under section 203(a)(9) of
9 the Department of Energy Organization Act (42 U.S.C.
10 7133(a)(9)), in consultation with the Director of the Of-
11 fice of Science, for grants to be competitively awarded and
12 subject to peer review for research relating to energy effi-
13 ciency.

14 (b) REPORT.—The Secretary shall submit to the Con-
15 gress, along with the President's annual budget request
16 under section 1105(a) of title 31, United States Code, a
17 report on the activities of the Energy Efficiency Science
18 Initiative, including a description of the process used to
19 award the funds and an explanation of how the research
20 relates to energy efficiency.



1 **Subtitle B—Distributed Energy and**
2 **Electric Energy Systems**

3 **PART 1—AUTHORIZATION OF APPROPRIATIONS**

4 **SEC. 111. DISTRIBUTED ENERGY AND ELECTRIC ENERGY**
5 **SYSTEMS.**

6 (a) IN GENERAL.—The following sums are author-
7 ized to be appropriated to the Secretary for distributed
8 energy and electric energy systems activities, including ac-
9 tivities authorized under this subtitle:

10 (1) For fiscal year 2003, \$155,000,000.

11 (2) For fiscal year 2004, \$190,000,000.

12 (3) For fiscal year 2005, \$200,000,000.

13 (4) For fiscal year 2006, \$220,000,000.

14 (5) For fiscal year 2007, \$240,000,000.

15 (b) MICRO-COGENERATION ENERGY TECH-
16 NOLOGY.—From amounts authorized under subsection
17 (a), \$2,000,000 for fiscal year 2003 and \$20,000,000 for
18 fiscal year 2004 shall be available for activities under sec-
19 tion 114.

20 **PART 2—DISTRIBUTED POWER**

21 **SEC. 112. STRATEGY.**

22 (a) REQUIREMENT.—Not later than 1 year after the
23 date of enactment of this Act, the Secretary shall develop
24 and transmit to the Congress a strategy for a comprehen-
25 sive research, development, demonstration, and commer-



1 cial application program to develop hybrid distributed
2 power systems that combine—

3 (1) one or more renewable electric power gen-
4 eration technologies of 10 megawatts or less located
5 near the site of electric energy use; and

6 (2) nonintermittent electric power generation
7 technologies suitable for use in a distributed power
8 system.

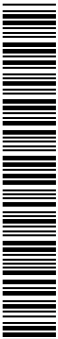
9 (b) CONTENTS.—The strategy shall—

10 (1) identify the needs best met with such hybrid
11 distributed power systems and the technological bar-
12 riers to the use of such systems;

13 (2) provide for the development of methods to
14 design, test, integrate into systems, and operate
15 such hybrid distributed power systems;

16 (3) include, as appropriate, research, develop-
17 ment, demonstration, and commercial application on
18 related technologies needed for the adoption of such
19 hybrid distributed power systems, including energy
20 storage devices and environmental control tech-
21 nologies; and

22 (4) describe how activities under the strategy
23 will be integrated with other research, development,
24 demonstration, and commercial application activities



1 supported by the Department of Energy related to
2 electric power technologies.

3 **SEC. 113. HIGH POWER DENSITY INDUSTRY PROGRAM.**

4 The Secretary shall establish a comprehensive re-
5 search, development, demonstration, and commercial ap-
6 plication program to improve energy efficiency of high
7 power density facilities, including data centers, server
8 farms, and telecommunications facilities. Such program
9 shall consider technologies that provide significant im-
10 provement in thermal controls, metering, load manage-
11 ment, peak load reduction, or the efficient cooling of elec-
12 tronics.

13 **SEC. 114. MICRO-COGENERATION ENERGY TECHNOLOGY.**

14 The Secretary shall make competitive, merit-based
15 grants to consortia for the development of micro-cogenera-
16 tion energy technology. The consortia shall explore the use
17 of small-scale combined heat and power in residential
18 heating appliances.

19 **PART 3—TRANSMISSION SYSTEMS**

20 **SEC. 115. TRANSMISSION INFRASTRUCTURE SYSTEMS RE-**
21 **SEARCH, DEVELOPMENT, DEMONSTRATION,**
22 **AND COMMERCIAL APPLICATION.**

23 (a) PROGRAM AUTHORIZED.—The Secretary shall de-
24 velop and implement a comprehensive research, develop-
25 ment, demonstration, and commercial application program



1 to promote improved reliability and efficiency of electrical
2 transmission systems. Such program may include—

3 (1) advanced energy technologies, materials,
4 and systems;

5 (2) advanced grid reliability and efficiency tech-
6 nology development;

7 (3) technologies contributing to significant load
8 reductions;

9 (4) advanced metering, load management, and
10 control technologies;

11 (5) technologies to enhance existing grid compo-
12 nents;

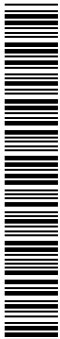
13 (6) the development and use of high-tempera-
14 ture superconductors to—

15 (A) enhance the reliability, operational
16 flexibility, or power-carrying capability of elec-
17 tric transmission or distribution systems; or

18 (B) increase the efficiency of electric en-
19 ergy generation, transmission, distribution, or
20 storage systems;

21 (7) integration of power systems, including sys-
22 tems to deliver high-quality electric power, electric
23 power reliability, and combined heat and power;

24 (8) any other infrastructure technologies, as ap-
25 propriate; and



1 (9) technology transfer and education.

2 (b) PROGRAM PLAN.—Not later than 1 year after the
3 date of the enactment of this Act, the Secretary, in con-
4 sultation with other appropriate Federal agencies, shall
5 prepare and transmit to Congress a 5-year program plan
6 to guide activities under this section. In preparing the pro-
7 gram plan, the Secretary shall consult with utilities, en-
8 ergy services providers, manufacturers, institutions of
9 higher education, other appropriate State and local agen-
10 cies, environmental organizations, professional and tech-
11 nical societies, and any other persons the Secretary con-
12 siders appropriate.

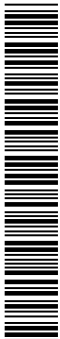
13 (c) REPORT.—Not later than 2 years after the trans-
14 mittal of the plan under subsection (b), the Secretary shall
15 transmit a report to Congress describing the progress
16 made under this section and identifying any additional re-
17 sources needed to continue the development and commer-
18 cial application of transmission infrastructure tech-
19 nologies.

20 **Subtitle C—Renewable Energy**

21 **PART 1—AUTHORIZATION OF APPROPRIATIONS**

22 **SEC. 121. RENEWABLE ENERGY.**

23 (a) IN GENERAL.—The following sums are author-
24 ized to be appropriated to the Secretary for renewable en-
25 ergy research, development, demonstration, and commer-



1 cial application activities, including activities authorized
2 under this subtitle, including the amounts authorized
3 under the amendments made by sections 124 and 125:

4 (1) For fiscal year 2003, \$390,000,000.

5 (2) For fiscal year 2004, \$460,000,000.

6 (3) For fiscal year 2005, \$510,000,000.

7 (4) For fiscal year 2006, \$560,000,000.

8 (5) For fiscal year 2007, \$609,000,000.

9 (b) BIOENERGY.—From the amounts authorized
10 under subsection (a), the following sums are authorized
11 to be appropriated to carry out section 122 and section
12 176:

13 (1) For fiscal year 2003, \$117,800,000.

14 (2) For fiscal year 2004, \$135,425,000.

15 (3) For fiscal year 2005, \$155,600,000.

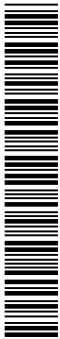
16 (4) For fiscal year 2006, \$167,650,000.

17 (5) For fiscal year 2007, \$180,000,000.

18 (c) LIMITS ON USE OF FUNDS.—

19 (1) EXCLUSION.—None of the funds authorized
20 to be appropriated under this section may be used
21 for Renewable Support and Implementation.

22 (2) BIOENERGY.—Of the funds authorized
23 under subsection (b), not less than \$5,000,000 for
24 each fiscal year shall be made available for grants to



1 Historically Black Colleges and Universities, Tribal
2 Colleges, and Hispanic-Serving Institutions.

3 (3) RURAL AND REMOTE LOCATIONS.—In car-
4 rying out this section, the Secretary, in consultation
5 with the Secretary of Agriculture, shall demonstrate
6 the use of advanced wind power technology, biomass,
7 geothermal energy systems, and other renewable en-
8 ergy technologies to assist in delivering electricity to
9 rural and remote locations.

10 **PART 2—BIOENERGY**

11 **SEC. 122. BIOENERGY PROGRAMS.**

12 The Secretary shall conduct a program of research,
13 development, demonstration, and commercial application
14 for bioenergy, including—

- 15 (1) biopower energy systems;
- 16 (2) biofuels;
- 17 (3) integrated applications of both biopower and
18 biofuels;
- 19 (4) cross-cutting research and development in
20 feedstocks; and
- 21 (5) economic analysis.

22 **PART 3—HYDROGEN**

23 **SEC. 123. SHORT TITLE.**

24 This part may be cited as the “George E. Brown,
25 Jr. and Robert S. Walker Hydrogen Future Act of 2002”.



1 **SEC. 124. MATSUNAGA ACT AMENDMENT.**

2 The Spark M. Matsunaga Hydrogen Research, Devel-
3 opment, and Demonstration Act of 1990 (42 U.S.C.
4 12401 et seq.) is amended by striking sections 102
5 through 109 and inserting the following:

6 **“SEC. 102. FINDING, PURPOSES, AND DEFINITIONS.**

7 “(a) FINDING.—Congress finds that it is in the na-
8 tional interest to accelerate efforts to develop a domestic
9 capability to economically produce hydrogen in quantities
10 that will make a significant contribution toward reducing
11 the Nation’s dependence on conventional fuels.

12 “(b) PURPOSES.—The purposes of this Act are—

13 “(1) to promote a research, development, and
14 demonstration program leading to the economical
15 and environmentally sound production, storage,
16 transport, and use of hydrogen as an energy source
17 for industrial, commercial, residential, transpor-
18 tation, and utility applications; and

19 “(2) to promote and coordinate activities in
20 technology transfer, education, and other informa-
21 tion transfer among Federal, State, and local agen-
22 cies; members of the energy, transportation, and
23 other industries; foreign nations; and other entities.

24 “(c) DEFINITIONS.—As used in this Act, the term—

25 “(1) ‘advisory committee’ means the advisory
26 committee established under section 108;



1 “(2) ‘critical technology’ (or ‘critical technical
2 issue’) means a technology (or issue) that, in the
3 opinion of the Secretary, requires understanding and
4 development in order to take the next step needed
5 in the development of hydrogen as an economic fuel
6 or storage medium;

7 “(3) ‘Department’ means the Department of
8 Energy; and

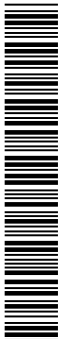
9 “(4) ‘Secretary’ means the Secretary of Energy.

10 **“SEC. 103. PLAN; REPORT.**

11 “(a) COORDINATION PLAN.—The Secretary, in con-
12 sultation with other Federal agencies, shall prepare a com-
13 prehensive coordination plan for activities under this Act
14 and under title II of the Hydrogen Future Act of 1996.
15 The Secretary shall take into account any plan under sec-
16 tion 202(b) of the Hydrogen Future Act of 1996.

17 “(b) REPORT.—

18 “(1) REQUIREMENT.—Not later than 1 year
19 after the date of enactment of the George E. Brown,
20 Jr. and Robert S. Walker Hydrogen Future Act of
21 2002, and biennially thereafter, the Secretary shall
22 transmit to Congress a detailed report, based on the
23 plan prepared under subsection (a), on the status
24 and progress of the programs authorized under this
25 Act.



1 “(2) CONTENTS.—A report under paragraph
2 (1) shall include, in addition to any views and rec-
3 ommendations of the Secretary—

4 “(A) an assessment of the effectiveness of
5 the programs authorized under this Act and of
6 the extent to which they are meeting the pur-
7 poses specified in section 102(b);

8 “(B) recommendations of the advisory
9 committee for any improvements in the pro-
10 gram that are needed, including recommenda-
11 tions for additional legislation; and

12 “(C) to the extent practicable, an analysis
13 of Federal, State, local, and private sector hy-
14 drogen-related research, development, and dem-
15 onstration activities to identify productive areas
16 for increased intergovernmental and private-
17 public sector collaboration.

18 **“SEC. 104. HYDROGEN RESEARCH AND DEVELOPMENT.**

19 “(a) PROGRAM.—The Secretary shall conduct a re-
20 search and development program relating to the produc-
21 tion, storage, transportation, and use of hydrogen as an
22 energy source, with the goal of enabling the private sector
23 to demonstrate the technical feasibility of using hydrogen
24 for industrial, commercial, residential, transportation, and
25 utility applications.



1 “(b) ELEMENTS.—In conducting the program au-
2 thorized by this section, the Secretary shall—

3 “(1) initiate or accelerate research and develop-
4 ment in critical technical issues that will contribute
5 to the development of more economical and environ-
6 mentally sound hydrogen energy systems, including
7 critical technical issues with respect to—

8 “(A) production, with consideration of
9 cost-effective production from renewable energy
10 sources;

11 “(B) liquefaction, transmission, and dis-
12 tribution;

13 “(C) storage, including storage of hydro-
14 gen in surface transportation; and

15 “(D) use, including use in—

16 “(i) surface transportation;

17 “(ii) isolated villages, islands, and
18 communities in which other energy sources
19 are not available or are very expensive;

20 “(iii) fuel cells and components, in-
21 cluding proton exchange membrane tech-
22 nologies; and

23 “(iv) foreign markets, particularly
24 where an energy infrastructure is not well
25 developed;



1 “(2) give particular attention to resolving crit-
2 ical technical issues preventing the introduction of
3 hydrogen as an energy source into the marketplace,
4 so as to enable the development of voluntary con-
5 sensus technical standards; and

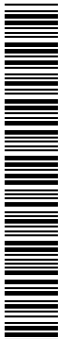
6 “(3) survey private sector hydrogen energy re-
7 search and development activities worldwide and
8 take steps to ensure that research and development
9 activities under this section do not—

10 “(A) unnecessarily duplicate any available
11 research and development; or

12 “(B) displace or compete with the privately
13 funded hydrogen energy research and develop-
14 ment activities of United States industry.

15 “(c) RESEARCH AND DEVELOPMENT SUPPORT.—The
16 Secretary is authorized to arrange for tests and dem-
17 onstrations and to disseminate to researchers and devel-
18 opers information, data, and other materials necessary to
19 support the research and development activities authorized
20 under this section and other efforts authorized under this
21 Act, consistent with section 106.

22 “(d) FEDERAL FUNDING.—The Secretary shall carry
23 out the research and development activities authorized
24 under this section using a competitive merit review proc-
25 ess.



1 “(e) COST SHARING.—

2 “(1) IN GENERAL.—The Secretary shall require
3 a commitment from non-Federal sources of at least
4 20 percent of the cost of proposed research and de-
5 velopment projects under this section.

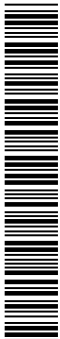
6 “(2) REDUCTION OR ELIMINATION.—The Sec-
7 retary may reduce or eliminate the cost sharing re-
8 quirement under paragraph (1)—

9 “(A) if the Secretary determines that the
10 research and development is of a basic or fun-
11 damental nature; or

12 “(B) for technical analyses, outreach ac-
13 tivities, and educational programs that the Sec-
14 retary does not expect to result in a marketable
15 product.

16 **“SEC. 105. DEMONSTRATIONS.**

17 “(a) REQUIREMENT.—The Secretary shall conduct
18 demonstrations of critical technologies so that technical
19 and nontechnical parameters can be evaluated to best de-
20 termine commercial applicability of such technologies.
21 Demonstrations under this section shall include fuel cells
22 and fuel cell components, including proton exchange mem-
23 brane technologies, for commercial, residential, and trans-
24 portation applications, using improved manufacturing pro-
25 duction and processes.



1 “(b) DEMONSTRATIONS WITH RESEARCH AND DE-
2 VELOPMENT ACTIVITIES.—Concurrently with activities
3 conducted pursuant to section 104, the Secretary shall
4 conduct small-scale demonstrations of hydrogen energy
5 technology at self-contained sites.

6 “(c) COST SHARING.—

7 “(1) IN GENERAL.—The Secretary shall require
8 a commitment from non-Federal sources of at least
9 50 percent of the costs directly relating to a dem-
10 onstration project under this section.

11 “(2) REDUCTION.—The Secretary may reduce
12 the non-Federal requirement under paragraph (1) if
13 the Secretary determines that the reduction is ap-
14 propriate considering the technological risks involved
15 in the project.

16 **“SEC. 106. TECHNOLOGY ASSESSMENT AND TRANSFER.**

17 “(a) PROGRAM.—

18 “(1) IN GENERAL.—The Secretary shall con-
19 duct a program designed to transfer critical tech-
20 nologies to the private sector, including application
21 in foreign countries to increase the global market for
22 the technologies and foster global development with-
23 out harmful environmental effects.

24 “(2) ADVICE AND ASSISTANCE.—The Secretary
25 shall direct the program authorized by this sub-



1 section with the advice and assistance of the advi-
2 sory committee.

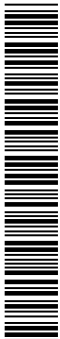
3 “(b) INFORMATION.—

4 “(1) IN GENERAL.—The Secretary, in carrying
5 out the program authorized by subsection (a),
6 shall—

7 “(A) undertake an update of the inventory
8 and assessment of hydrogen energy technologies
9 and their commercial capability to economically
10 produce, store, transport, and use hydrogen as
11 an energy source in the industrial, commercial,
12 residential, transportation, and utility sectors;
13 and

14 “(B) develop with the National Aero-
15 nautics and Space Administration, other Fed-
16 eral agencies as appropriate, and industry, an
17 information exchange program to improve tech-
18 nology transfer for hydrogen energy tech-
19 nologies.

20 “(2) ACTIVITIES.—The information exchange
21 program may consist of workshops, publications,
22 conferences, and a database for the use by the public
23 and private sectors. The Secretary shall also foster
24 the exchange of generic, nonproprietary information
25 and technology, developed pursuant to this Act,



1 among industry, academia, and the Federal Govern-
2 ment, to help the United States economy attain the
3 economic benefits of this information and tech-
4 nology.

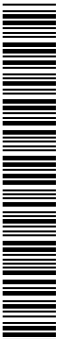
5 **“SEC. 107. COORDINATION AND CONSULTATION.**

6 “(a) SECRETARY’S RESPONSIBILITY.—The Secretary
7 shall have overall management responsibility for carrying
8 out programs under this Act. In carrying out such pro-
9 grams, the Secretary, consistent with such overall manage-
10 ment responsibility—

11 “(1) shall establish a central point for the co-
12 ordination of all hydrogen energy research, develop-
13 ment, and demonstration activities of the Depart-
14 ment; and

15 “(2) may use the expertise of any other Federal
16 agency in accordance with subsection (b) in carrying
17 out any activities under this Act, to the extent that
18 the Secretary determines that any such agency has
19 capabilities which would allow such agency to con-
20 tribute to the purposes of this Act.

21 “(b) ASSISTANCE.—The Secretary may, in accord-
22 ance with subsection (a), obtain the assistance of any Fed-
23 eral agency upon written request, on a reimbursable basis
24 or otherwise and with the consent of such agency. Each



1 such request shall identify the assistance the Secretary
2 considers necessary to carry out any duty under this Act.

3 “(c) CONSULTATION.—The Secretary shall consult
4 with other Federal agencies as appropriate, and the advi-
5 sory committee, in carrying out the Secretary’s authorities
6 pursuant to this Act.

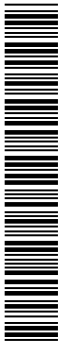
7 **“SEC. 108. ADVISORY COMMITTEE.**

8 “(a) ESTABLISHMENT.—There is hereby established
9 the Hydrogen Technical Advisory Committee to advise the
10 Secretary on the programs under this Act and under title
11 II of the Hydrogen Future Act of 1996, to remain in exist-
12 ence for the duration of such programs.

13 “(b) MEMBERSHIP.—

14 “(1) IN GENERAL.—The advisory committee
15 shall be comprised of not fewer than 9 nor more
16 than 15 members appointed by the Secretary, and
17 shall be comprised of such representatives from do-
18 mestic industry, universities, professional societies,
19 Government laboratories, and financial, environ-
20 mental, and other organizations as the Secretary
21 considers appropriate based on the Secretary’s as-
22 sessment of the technical and other qualifications of
23 such representatives.

24 “(2) TERMS.—



1 “(A) IN GENERAL.—The term of a mem-
2 ber of the advisory committee shall not be more
3 than three years.

4 “(B) STAGGERED TERMS.—The Secretary
5 may appoint members of the advisory com-
6 mittee in a manner that allows the terms of the
7 members serving at any time to expire at
8 spaced intervals so as to ensure continuity in
9 the functioning of the advisory committee.

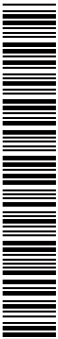
10 “(C) REAPPOINTMENT.—A member of the
11 advisory committee whose term expires may be
12 reappointed.

13 “(3) CHAIRPERSON.—The advisory committee
14 shall have a chairperson, who shall be elected by the
15 members from among their number.

16 “(c) COOPERATION.—The heads of Federal agencies
17 shall cooperate with the advisory committee in carrying
18 out the requirements of this section and shall furnish to
19 the advisory committee such information as the advisory
20 committee considers necessary to carry out this section.

21 “(d) REVIEW.—The advisory committee shall review
22 and make any necessary recommendations to the Sec-
23 retary on—

24 “(1) the implementation and conduct of pro-
25 grams under this Act;



1 “(2) the economic, technological, and environ-
2 mental consequences of the deployment of tech-
3 nologies for the production, storage, transportation,
4 and use of hydrogen as an energy source; and

5 “(3) the coordination plan prepared by the Sec-
6 retary under section 103 and the plan developed by
7 the interagency task force under section 202(b) of
8 the Hydrogen Future Act of 1996.

9 “(e) RESPONSE TO RECOMMENDATIONS.—The Sec-
10 retary shall consider, but need not adopt, any rec-
11 ommendations of the advisory committee under subsection
12 (d). The Secretary shall either describe the implementa-
13 tion, or provide an explanation of the reasons that any
14 such recommendations will not be implemented, in the re-
15 port to Congress under section 103(b).

16 “(f) SUPPORT.—The Secretary shall provide such
17 staff, funds, and other support as may be necessary to
18 enable the advisory committee to carry out its functions.

19 **“SEC. 109. NATIONAL ACADEMY OF SCIENCES REVIEW.**

20 “Beginning 2 years after the date of the enactment
21 of this section, and every 4 years thereafter, the National
22 Academy of Sciences shall perform a review of the
23 progress made through the programs and activities au-
24 thorized under this Act and title II of the Hydrogen Fu-



1 ture Act of 1996, and shall report to the Congress on the
2 results of such reviews.

3 **“SEC. 110. AUTHORIZATION OF APPROPRIATIONS.**

4 “There are authorized to be appropriated to carry out
5 the purposes of this Act (in addition to any amounts made
6 available for such purposes under other Acts)—

7 “(1) \$3,000,000 for fiscal year 1992;

8 “(2) \$7,000,000 for fiscal year 1993;

9 “(3) \$10,000,000 for fiscal year 1994;

10 “(4) \$14,500,000 for fiscal year 1996;

11 “(5) \$20,000,000 for fiscal year 1997;

12 “(6) \$25,000,000 for fiscal year 1998;

13 “(7) \$30,000,000 for fiscal year 1999;

14 “(8) \$35,000,000 for fiscal year 2000;

15 “(9) \$40,000,000 for fiscal year 2001;

16 “(10) \$45,000,000 for fiscal year 2002;

17 “(11) \$50,000,000 for fiscal year 2003;

18 “(12) \$55,000,000 for fiscal year 2004;

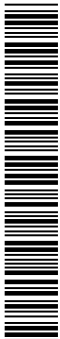
19 “(13) \$60,000,000 for fiscal year 2005;

20 “(14) \$65,000,000 for fiscal year 2006; and

21 “(15) \$70,000,000 for fiscal year 2007.”.

22 **SEC. 125. HYDROGEN FUTURE ACT AMENDMENT.**

23 Title II of the Hydrogen Future Act of 1996 (42
24 U.S.C. 12403 note) is amended to read as follows:



1 **“TITLE II—FUEL CELLS**
2 **“SEC. 201. INTEGRATION OF FUEL CELLS WITH HYDROGEN**
3 **SYSTEMS.**

4 “(a) IN GENERAL.—The Secretary shall solicit pro-
5 posals for projects demonstrating hydrogen technologies
6 needed to use fuel cells in Federal, State, and local govern-
7 ment stationary and transportation applications.

8 “(b) COMPETITIVE EVALUATION.—Each proposal
9 submitted in response to the solicitation under this section
10 shall be evaluated on a competitive basis using peer re-
11 view. The Secretary is not required to make an award
12 under this section in the absence of a meritorious pro-
13 posal.

14 “(c) PREFERENCE.—The Secretary shall give pref-
15 erence, in making an award under this section, to pro-
16 posals that—

17 “(1) are submitted jointly from consortia in-
18 cluding academic institutions, industry, State or
19 local governments, and Federal laboratories; and

20 “(2) reflect proven experience and capability
21 with technologies relevant to the projects proposed.

22 “(d) NON-FEDERAL SHARE.—

23 “(1) IN GENERAL.—Except as provided in para-
24 graph (2), the Secretary shall require a commitment
25 from non-Federal sources of at least 50 percent of



1 the costs directly relating to a demonstration project
2 under this section.

3 “(2) REDUCTION.—The Secretary may reduce
4 the non-Federal requirement under paragraph (1) if
5 the Secretary determines that the reduction is ap-
6 propriate considering the technological risks involved
7 in the project.

8 **“SEC. 202. INTERAGENCY TASK FORCE.**

9 “(a) ESTABLISHMENT.—Not later than 120 days
10 after the date of enactment of the George E. Brown, Jr.
11 and Robert S. Walker Hydrogen Future Act of 2002, the
12 Secretary shall establish an interagency task force led by
13 the Secretary’s designee and comprised of representatives
14 of—

15 “(1) the Office of Science and Technology Pol-
16 icy;

17 “(2) the Department of Transportation;

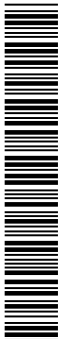
18 “(3) the Department of Defense;

19 “(4) the Department of Commerce (including
20 the National Institute of Standards and Tech-
21 nology);

22 “(5) the Environmental Protection Agency;

23 “(6) the National Aeronautics and Space Ad-
24 ministration; and

25 “(7) other Federal agencies as appropriate.



1 “(b) DUTIES.—

2 “(1) DEVELOPMENT OF PLAN.—The task force
3 shall develop a plan for carrying out this title.

4 “(2) FOCUS OF PLAN.—The plan shall focus on
5 development and demonstration of integrated sys-
6 tems and components for—

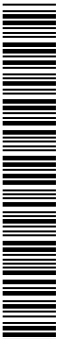
7 “(A) the production, storage, transport,
8 and use of hydrogen as an energy source for
9 Federal, State, and local government stationary
10 and transportation applications;

11 “(B) hydrogen-based infrastructure for
12 buses and other fleet transportation systems
13 that include zero-emission vehicles; and

14 “(C) hydrogen-based distributed power
15 generation, including the generation of com-
16 bined heat, power, and hydrogen.

17 **“SEC. 203. COOPERATIVE AND COST-SHARING AGREE-**
18 **MENTS.**

19 “The Secretary shall enter into cooperative and cost-
20 sharing agreements with Federal, State, and local agencies
21 for participation by the agencies in demonstrations at fa-
22 cilities administered by the agencies, with the aim of inte-
23 grating high-efficiency hydrogen systems using fuel cells
24 into the facilities to provide near-term benefits and pro-
25 mote a smooth transition to hydrogen as an energy source.



1 **“SEC. 204. INTEGRATION AND DISSEMINATION OF TECH-**
2 **NICAL INFORMATION.**

3 “The Secretary shall—

4 “(1) integrate all the technical information
5 available as a result of development and demonstra-
6 tion projects under this title;

7 “(2) make the information available to all inter-
8 ested persons; and

9 “(3) foster the exchange of generic, nonpropri-
10 etary information and technology developed under
11 this title among industry, academia, and Federal,
12 State, and local governments, to help the United
13 States economy attain the economic benefits of the
14 information and technology.

15 **“SEC. 205. AUTHORIZATION OF APPROPRIATIONS.**

16 “There are authorized to be appropriated to the Sec-
17 retary, for activities under this title—

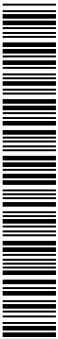
18 “(1) \$5,000,000 for fiscal year 2003;

19 “(2) \$25,000,000 for fiscal year 2004;

20 “(3) \$30,000,000 for fiscal year 2005;

21 “(4) \$35,000,000 for fiscal year 2006; and

22 “(5) \$40,000,000 for fiscal year 2007.”.



1 **PART 4—MISCELLANEOUS PROJECTS**

2 **SEC. 126. MISCELLANEOUS PROJECTS.**

3 The Secretary shall conduct research, development,
4 demonstration, and commercial application programs
5 for—

6 (1) ocean energy, including wave energy;

7 (2) the combined use of renewable energy tech-
8 nologies with one another and with other energy
9 technologies, including the combined use of wind
10 power and coal gasification technologies; and

11 (3) hydrogen carrier fuels.

12 **Subtitle D—Nuclear Energy**

13 **PART 1—AUTHORIZATION OF APPROPRIATIONS**

14 **SEC. 131. NUCLEAR ENERGY.**

15 (a) CORE PROGRAMS.—The following sums are au-
16 thorized to be appropriated to the Secretary for nuclear
17 energy research, development, demonstration, and com-
18 mercial application activities, including activities author-
19 ized under this subtitle, other than those described in sub-
20 section (b):

21 (1) For fiscal year 2003, \$200,000,000.

22 (2) For fiscal year 2004, \$233,000,000.

23 (3) For fiscal year 2005, \$266,000,000.

24 (4) For fiscal year 2006, \$300,000,000.

25 (5) For fiscal year 2007, \$334,000,000.



1 (b) NUCLEAR INFRASTRUCTURE SUPPORT.—The fol-
2 lowing sums are authorized to be appropriated to the Sec-
3 retary for activities under section 132(f):

4 (1) For fiscal year 2003, \$120,000,000.

5 (2) For fiscal year 2004, \$125,000,000.

6 (3) For fiscal year 2005, \$130,000,000.

7 (4) For fiscal year 2006, \$135,000,000.

8 (5) For fiscal year 2007, \$140,000,000.

9 (c) ALLOCATIONS.—From amounts authorized under
10 subsection (a), the following sums are authorized:

11 (1) ADVANCED FUEL RECYCLING PROGRAM.—

12 For activities under section 133—

13 (A) for fiscal year 2003, \$80,000,000;

14 (B) for fiscal year 2004, \$93,000,000;

15 (C) for fiscal year 2005, \$106,000,000;

16 (D) for fiscal year 2006, \$120,000,000;

17 and

18 (E) for fiscal year 2007, \$134,000,000.

19 (2) UNIVERSITY PROGRAMS.—For activities
20 under section 134—

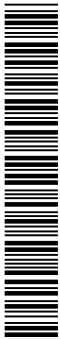
21 (A) for fiscal year 2003, \$25,000,000;

22 (B) for fiscal year 2004, \$33,000,000;

23 (C) for fiscal year 2005, \$37,900,000;

24 (D) for fiscal year 2006, \$43,600,000; and

25 (E) for fiscal year 2007, \$50,100,000.



1 (d) LIMIT ON USE OF FUNDS.—None of the funds
2 authorized under this section may be used for decommis-
3 sioning the Fast Flux Test Facility.

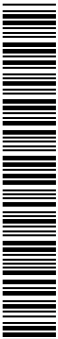
4 **PART 2—NUCLEAR ENERGY RESEARCH**
5 **PROGRAMS**

6 **SEC. 132. NUCLEAR ENERGY RESEARCH PROGRAMS.**

7 (a) NUCLEAR ENERGY RESEARCH INITIATIVE.—The
8 Secretary shall carry out a Nuclear Energy Research Ini-
9 tiative for research and development related to nuclear en-
10 ergy.

11 (b) NUCLEAR ENERGY PLANT OPTIMIZATION PRO-
12 GRAM.—The Secretary shall carry out a Nuclear Energy
13 Plant Optimization Program to support research and de-
14 velopment activities addressing reliability, availability, pro-
15 ductivity, and component aging in existing nuclear power
16 plants.

17 (c) NUCLEAR POWER 2010 PROGRAM.—The Sec-
18 retary shall carry out a Nuclear Power 2010 Program,
19 consistent with recommendations in the October 2001 re-
20 port entitled “A Roadmap to Deploy New Nuclear Power
21 Plants in the United States by 2010” issued by the Nu-
22 clear Energy Research Advisory Committee of the Depart-
23 ment. The Program shall—



1 (1) rely on the expertise and capabilities of the
2 National Laboratories in the areas of advanced nu-
3 clear fuels cycles and fuels testing;

4 (2) pursue an approach that considers a variety
5 of reactor designs;

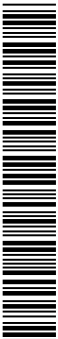
6 (3) include participation of international col-
7 laborators in research, development, and design ef-
8 forts as appropriate; and

9 (4) encourage industry participation.

10 (d) GENERATION IV NUCLEAR ENERGY SYSTEMS
11 INITIATIVE.—The Secretary shall carry out a Generation
12 IV Nuclear Energy Systems Initiative to develop an over-
13 all technology plan and to support research and develop-
14 ment necessary to make an informed technical decision
15 about the most promising candidates for eventual commer-
16 cial application. The Initiative shall examine advanced
17 proliferation-resistant and passively safe reactor designs,
18 including designs that—

19 (1) are economically competitive with other elec-
20 tric power generation plants;

21 (2) have higher efficiency, lower cost, and im-
22 proved safety compared to reactors in operation on
23 the date of enactment of this Act;



1 (3) use fuels that are proliferation resistant and
2 have substantially reduced production of high-level
3 waste per unit of output; and

4 (4) utilize improved instrumentation.

5 (e) REACTOR PRODUCTION OF HYDROGEN.—The
6 Secretary shall carry out research to examine designs for
7 high-temperature reactors capable of producing large-scale
8 quantities of hydrogen using thermochemical processes.

9 (f) NUCLEAR INFRASTRUCTURE SUPPORT.—The
10 Secretary shall develop and implement a strategy for the
11 facilities of the Office of Nuclear Energy, Science, and
12 Technology and shall transmit a report containing the
13 strategy along with the President's budget request to the
14 Congress for fiscal year 2005. Such strategy shall provide
15 a cost-effective means for—

16 (1) maintaining existing facilities and infra-
17 structure, as needed;

18 (2) closing unneeded facilities;

19 (3) making facility upgrades and modifications;

20 and

21 (4) building new facilities.

22 **PART 3—ADVANCED FUEL RECYCLING**

23 **SEC. 133. ADVANCED FUEL RECYCLING PROGRAM.**

24 (a) IN GENERAL.—The Secretary, through the Direc-
25 tor of the Office of Nuclear Energy, Science and Tech-



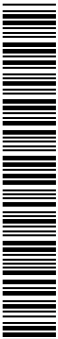
1 nology, shall conduct an advanced fuel recycling tech-
2 nology research and development program to evaluate pro-
3 liferation-resistant fuel recycling and transmutation tech-
4 nologies which minimize environmental or public health
5 and safety impacts as an alternative to aqueous reprocess-
6 ing technologies deployed as of the date of enactment of
7 this Act in support of evaluation of alternative national
8 strategies for spent nuclear fuel and the Generation IV
9 advanced reactor concepts, subject to annual review by the
10 Secretary's Nuclear Energy Research Advisory Committee
11 or other independent entity, as appropriate. Opportunities
12 to enhance progress of this program through international
13 cooperation should be sought.

14 (b) REPORTS.—The Secretary shall report on the ac-
15 tivities of the advanced fuel recycling technology research
16 and development program, as part of the Department's
17 annual budget submission.

18 **PART 4—UNIVERSITY PROGRAMS**

19 **SEC. 134. UNIVERSITY NUCLEAR SCIENCE AND ENGINEER-**
20 **ING SUPPORT.**

21 (a) ESTABLISHMENT.—The Secretary shall support
22 a program to invest in human resources and infrastructure
23 in the nuclear sciences and engineering and related fields
24 (including health physics and nuclear and radiochemistry),



1 consistent with departmental missions related to civilian
2 nuclear research and development.

3 (b) DUTIES.—In carrying out the program under this
4 section, the Secretary shall—

5 (1) establish a graduate and undergraduate fel-
6 lowship program to attract new and talented stu-
7 dents;

8 (2) establish a Junior Faculty Research Initi-
9 ation Grant Program to assist institutions of higher
10 education in recruiting and retaining new faculty in
11 the nuclear sciences and engineering;

12 (3) support fundamental nuclear sciences and
13 engineering research through the Nuclear Engineer-
14 ing Education Research Program;

15 (4) encourage collaborative nuclear research
16 among industry, National Laboratories, and institu-
17 tions of higher education through the Nuclear En-
18 ergy Research Initiative; and

19 (5) support communication and outreach re-
20 lated to nuclear science and engineering.

21 (c) MAINTAINING UNIVERSITY RESEARCH AND
22 TRAINING REACTORS AND ASSOCIATED INFRASTRUC-
23 TURE.—Activities under this section may include—

24 (1) converting research reactors currently using
25 high-enrichment fuels to low-enrichment fuels, up-



1 grading operational instrumentation, and sharing of
2 reactors among institutions of higher education;

3 (2) providing technical assistance, in collabora-
4 tion with the United States nuclear industry, in reli-
5 censing and upgrading training reactors as part of
6 a student training program; and

7 (3) providing funding for reactor improvements
8 as part of a focused effort that emphasizes research,
9 training, and education.

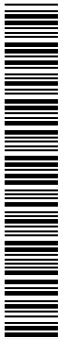
10 (d) UNIVERSITY-NATIONAL LABORATORY INTER-
11 ACTIONS.—The Secretary shall develop—

12 (1) a sabbatical fellowship program for profes-
13 sors at institutions of higher education to spend ex-
14 tended periods of time at National Laboratories in
15 the areas of nuclear science and technology; and

16 (2) a visiting scientist program in which Na-
17 tional Laboratory staff can spend time in academic
18 nuclear science and engineering departments.

19 The Secretary may provide fellowships for students to
20 spend time at National Laboratories in the area of nuclear
21 science with a member of the Laboratory staff acting as
22 a mentor.

23 (e) OPERATING AND MAINTENANCE COSTS.—Fund-
24 ing for a research project provided under this section may
25 be used to offset a portion of the operating and mainte-



1 nance costs of a research reactor at an institution of high-
2 er education used in the research project.

3 **Subtitle E—Fossil Energy**

4 **PART 1—AUTHORIZATION OF APPROPRIATIONS**

5 **SEC. 141. FOSSIL ENERGY.**

6 (a) IN GENERAL.—The following sums are author-
7 ized to be appropriated to the Secretary for fossil energy
8 research, development, demonstration, and commercial ap-
9 plication activities, including activities authorized under
10 this subtitle, other than those described in subsection (b):

11 (1) For fiscal year 2003, \$505,000,000.

12 (2) For fiscal year 2004, \$523,000,000.

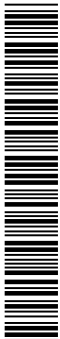
13 (3) For fiscal year 2005, \$542,000,000.

14 (4) For fiscal year 2006, \$558,000,000.

15 (5) For fiscal year 2007, \$585,000,000.

16 (b) ULTRA-DEEPWATER AND UNCONVENTIONAL RE-
17 SOURCES.—

18 (1) OIL AND GAS LEASE INCOME.—For each of
19 fiscal years 2003 through 2010, from any royalties,
20 rents, and bonuses derived from Federal onshore
21 and offshore oil and gas leases issued under the
22 Outer Continental Shelf Lands Act and the Mineral
23 Leasing Act which are deposited in the Treasury,
24 and after distribution of any such funds as described
25 in paragraph (2), an amount equal to 7.5 percent of

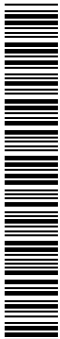


1 the amount of royalties, rents, and bonuses derived
2 from those leases deposited in the Treasury shall be
3 deposited into the Ultra-Deepwater and Unconven-
4 tional Natural Gas and Other Petroleum Research
5 Fund (in this subsection referred to as the Fund).
6 For purposes of this subsection, the term “royalties”
7 excludes proceeds from the sale of royalty production
8 taken in kind and royalty production that is trans-
9 ferred under section 27(a)(3) of the Outer Conti-
10 nental Shelf Lands Act (43 U.S.C. 1353(a)(3)).
11 Monies in the Fund shall be available to the Sec-
12 retary for obligation under part 3, without fiscal
13 year limitation, to the extent provided in advance in
14 appropriations Acts.

15 (2) PRIOR DISTRIBUTIONS.—The distributions
16 described in paragraph (1) are those required by
17 law—

18 (A) to States and to the Reclamation Fund
19 under the Mineral Leasing Act (30 U.S.C.
20 191(a)); and

21 (B) to other funds receiving monies from
22 Federal oil and gas leasing programs,
23 including—



1 (i) any recipients pursuant to section
2 8(g) of the Outer Continental Shelf Lands
3 Act (43 U.S.C. 1337(g));

4 (ii) the Land and Water Conservation
5 Fund, pursuant to section 2(c) of the Land
6 and Water Conservation Fund Act of 1965
7 (16 U.S.C. 4601–5(c)); and

8 (iii) the Historic Preservation Fund,
9 pursuant to section 108 of the National
10 Historic Preservation Act (16 U.S.C.
11 470h).

12 (3) ALLOCATION.—Amounts made available
13 under this subsection in each fiscal year shall be al-
14 located as follows:

15 (A) 67.5 percent shall be for ultra-deep-
16 water natural gas and other petroleum activities
17 under section 145;

18 (B) 22.5 percent shall be for unconven-
19 tional natural gas and other petroleum resource
20 activities under section 146; and

21 (C) 10 percent shall be for research com-
22 plementary to research under section 144(b)(1)
23 through (3).

24 (c) ALLOCATIONS.—From amounts authorized under
25 subsection (a), the following sums are authorized:



1 (1) FUEL CELL PROTON EXCHANGE MEMBRANE
2 TECHNOLOGY.—For activities under section
3 142(c)(2), \$28,000,000 for each of the fiscal years
4 2003 through 2007.

5 (2) COAL MINING TECHNOLOGIES.—For activi-
6 ties under section 143—

7 (A) for fiscal year 2004, \$12,000,000; and

8 (B) for fiscal year 2005, \$15,000,000.

9 (3) OFFICE OF ARCTIC ENERGY.—For the Of-
10 fice of Arctic Energy under section 3197 of the
11 Floyd D. Spence National Defense Authorization
12 Act for Fiscal Year 2001 (Public Law 106–398),
13 \$25,000,000 for each of fiscal years 2003 though
14 2007.

15 (d) EXTENDED AUTHORIZATION.—There are author-
16 ized to be appropriated to the Secretary for the Office of
17 Arctic Energy under section 3197 of the Floyd D. Spence
18 National Defense Authorization Act for Fiscal Year 2001
19 (Public Law 106–398), \$25,000,000 for each of fiscal
20 years 2008 though 2011.

21 (e) LIMITS ON USE OF FUNDS.—

22 (1) EXCLUSIONS.—None of the funds author-
23 ized under this section may be used for—

24 (A) Fossil Energy Environmental Restora-
25 tion; or



1 (B) Import/Export Authorization.

2 (2) UNIVERSITY COAL MINING RESEARCH.—Of
3 the funds authorized under subsection (c)(2), not
4 less than 20 percent of the funds appropriated for
5 each fiscal year shall be dedicated to research and
6 development carried out at institutions of higher
7 education.

8 **PART 2—RESEARCH PROGRAMS**

9 **SEC. 142. FOSSIL ENERGY RESEARCH PROGRAMS.**

10 (a) COAL RESEARCH.—(1) In addition to the Clean
11 Coal Power Initiative authorized under title V, the Sec-
12 retary shall conduct a program of research, development,
13 demonstration, and commercial application for coal and
14 power systems, including—

15 (A) central systems;

16 (B) sequestration research and development;

17 (C) fuels;

18 (D) advanced research; and

19 (E) advanced separation technologies.

20 (2) No funds may be used to carry out the activities
21 authorized by paragraph (1) after September 30, 2003,
22 unless one month has elapsed since the Secretary has
23 transmitted to the Congress a report providing—

24 (A) a detailed description of how proposals will
25 be solicited and evaluated;



1 (B) a list of activities and technical milestones;
2 and

3 (C) a description of how these activities will
4 complement and not duplicate the Clean Coal Power
5 Initiative authorized under title V.

6 (b) OIL AND GAS RESEARCH.—The Secretary shall
7 conduct a program of research, development, demonstra-
8 tion, and commercial application on oil and gas,
9 including—

10 (1) exploration and production;

11 (2) gas hydrates;

12 (3) reservoir life and extension;

13 (4) transportation and distribution infrastruc-
14 ture;

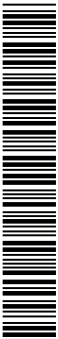
15 (5) ultraclean fuels;

16 (6) heavy oil and oil shale; and

17 (7) environmental research.

18 (c) FUEL CELLS.—(1) The Secretary shall conduct
19 a program of research, development, demonstration, and
20 commercial application on fuel cells for low-cost, high-effi-
21 ciency, fuel-flexible, modular power systems.

22 (2) The demonstrations shall include fuel cell proton
23 exchange membrane technology for commercial, residen-
24 tial, and transportation applications, and distributed gen-



1 eration systems, utilizing improved manufacturing produc-
2 tion and processes.

3 (d) NATURAL GAS AND OIL DEPOSITS REPORT.—
4 Not later than 2 years after the date of the enactment
5 of this Act, and at 2-year intervals thereafter, the Sec-
6 retary of the Interior, in consultation with other appro-
7 priate Federal agencies, shall transmit a report to the
8 Congress of the latest estimates of natural gas and oil re-
9 serves, reserves growth, and undiscovered resources in
10 Federal and State waters off the coast of Louisiana and
11 Texas.

12 **SEC. 143. RESEARCH AND DEVELOPMENT FOR COAL MIN-**
13 **ING TECHNOLOGIES.**

14 (a) ESTABLISHMENT.—The Secretary shall carry out
15 a program of research and development on coal mining
16 technologies. The Secretary shall cooperate with appro-
17 priate Federal agencies, coal producers, trade associations,
18 equipment manufacturers, institutions of higher education
19 with mining engineering departments, and other relevant
20 entities.

21 (b) PROGRAM.—The research and development activi-
22 ties carried out under this section shall—

23 (1) be based on the mining research and devel-
24 opment priorities identified by the Mining Industry
25 of the Future Program and in the recommendations



1 from relevant reports of the National Academy of
2 Sciences on mining technologies; and

3 (2) expand mining research capabilities at insti-
4 tutions of higher education.

5 **PART 3—ULTRA-DEEPWATER AND UNCONVEN-**
6 **TIONAL NATURAL GAS AND OTHER PETRO-**
7 **LEUM RESOURCES**

8 **SEC. 144. PROGRAM AUTHORITY.**

9 (a) IN GENERAL.—The Secretary shall carry out a
10 program under this part of research, development, dem-
11 onstration, and commercial application of technologies for
12 ultra-deepwater and unconventional natural gas and other
13 petroleum resource exploration and production, including
14 safe operations and environmental mitigation (including
15 reduction of greenhouse gas emissions and sequestration
16 of carbon).

17 (b) PROGRAM ELEMENTS.—The program under this
18 part shall address the following areas, including improving
19 safety and minimizing environmental impacts of activities
20 within each area:

21 (1) Ultra-deepwater technology.

22 (2) Ultra-deepwater architecture.

23 (3) Unconventional natural gas and other petro-
24 leum resource exploration and production tech-
25 nology.



1 (c) LIMITATION ON LOCATION OF FIELD ACTIVI-
2 TIES.—Field activities under the program under this part
3 shall be carried out only—

4 (1) in—

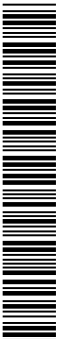
5 (A) areas in the territorial waters of the
6 United States not under any Outer Continental
7 Shelf moratorium as of September 30, 2002;

8 (B) areas onshore in the United States on
9 public land administered by the Secretary of the
10 Interior available for oil and gas leasing, where
11 consistent with applicable law and land use
12 plans; and

13 (C) areas onshore in the United States on
14 State or private land, subject to applicable law;
15 and

16 (2) with the approval of the appropriate Fed-
17 eral or State land management agency or private
18 land owner.

19 (d) RESEARCH AT NATIONAL ENERGY TECHNOLOGY
20 LABORATORY.—The Secretary, through the National En-
21 ergy Technology Laboratory, shall carry out research com-
22 plementary to research under section 144(b)(1) through
23 (3).



1 (e) CONSULTATION WITH SECRETARY OF THE INTE-
2 RIOR.—In carrying out this part, the Secretary shall con-
3 sult regularly with the Secretary of the Interior.

4 **SEC. 145. ULTRA-DEEPWATER PROGRAM.**

5 (a) IN GENERAL.—The Secretary shall carry out the
6 activities under paragraphs (1) and (2) of section 144(b),
7 to maximize the value of the ultra-deepwater natural gas
8 and other petroleum resources of the United States by in-
9 creasing the supply of such resources and by reducing the
10 cost and increasing the efficiency of exploration for and
11 production of such resources, while improving safety and
12 minimizing environmental impacts.

13 (b) ROLE OF THE SECRETARY.—The Secretary shall
14 have ultimate responsibility for, and oversight of, all as-
15 pects of the program under this section.

16 (c) ROLE OF THE PROGRAM CONSORTIUM.—

17 (1) IN GENERAL.—The Secretary shall contract
18 with a consortium to—

19 (A) manage awards pursuant to subsection
20 (f)(4);

21 (B) make recommendations to the Sec-
22 retary for project solicitations;

23 (C) disburse funds awarded under sub-
24 section (f) as directed by the Secretary in ac-



1 cordance with the annual plan under subsection
2 (e); and

3 (D) carry out other activities assigned to
4 the program consortium by this section.

5 (2) LIMITATION.—The Secretary may not as-
6 sign any activities to the program consortium except
7 as specifically authorized under this section.

8 (3) CONFLICT OF INTEREST.—(A) The Sec-
9 retary shall establish procedures—

10 (i) to ensure that each board member, offi-
11 cer, or employee of the program consortium
12 who is in a decisionmaking capacity under sub-
13 section (f)(3) or (4) shall disclose to the Sec-
14 retary any financial interests in, or financial re-
15 lationships with, applicants for or recipients of
16 awards under this section, including those of
17 his or her spouse or minor child, unless such re-
18 lationships or interests would be considered to
19 be remote or inconsequential; and

20 (ii) to require any board member, officer,
21 or employee with a financial relationship or in-
22 terest disclosed under clause (i) to recuse him-
23 self or herself from any review under subsection
24 (f)(3) or oversight under subsection (f)(4) with
25 respect to such applicant or recipient.



1 (B) The Secretary may disqualify an applica-
2 tion or revoke an award under this section if a board
3 member, officer, or employee has failed to comply
4 with procedures required under subparagraph
5 (A)(ii).

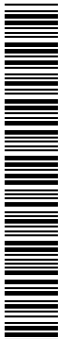
6 (d) SELECTION OF THE PROGRAM CONSORTIUM.—

7 (1) IN GENERAL.—The Secretary shall select
8 the program consortium through an open, competi-
9 tive process.

10 (2) MEMBERS.—The program consortium may
11 include corporations, institutions of higher edu-
12 cation, National Laboratories, or other research in-
13 stitutions. After submitting a proposal under para-
14 graph (4), the program consortium may not add
15 members without the consent of the Secretary.

16 (3) TAX STATUS.—The program consortium
17 shall be an entity that is exempt from tax under sec-
18 tion 501(c)(3) of the Internal Revenue Code of
19 1986.

20 (4) SCHEDULE.—Not later than 90 days after
21 the date of enactment of this Act, the Secretary
22 shall solicit proposals for the creation of the pro-
23 gram consortium, which must be submitted not less
24 than 180 days after the date of enactment of this
25 Act. The Secretary shall select the program consor-



1 tium not later than 240 days after such date of en-
2 actment.

3 (5) APPLICATION.—Applicants shall submit a
4 proposal including such information as the Secretary
5 may require. At a minimum, each proposal shall—

6 (A) list all members of the consortium;

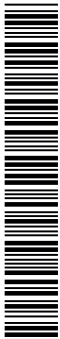
7 (B) fully describe the structure of the con-
8 sortium, including any provisions relating to in-
9 tellectual property; and

10 (C) describe how the applicant would carry
11 out the activities of the program consortium
12 under this section.

13 (6) ELIGIBILITY.—To be eligible to be selected
14 as the program consortium, an applicant must be an
15 entity whose members collectively have demonstrated
16 capabilities in planning and managing research, de-
17 velopment, demonstration, and commercial applica-
18 tion programs in natural gas or other petroleum ex-
19 ploration or production.

20 (7) CRITERION.—The Secretary may consider
21 the amount of the fee an applicant proposes to re-
22 ceive under subsection (g) in selecting a consortium
23 under this section.

24 (e) ANNUAL PLAN.—



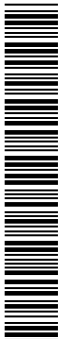
1 (1) IN GENERAL.—The program under this sec-
2 tion shall be carried out pursuant to an annual plan
3 prepared by the Secretary in accordance with para-
4 graph (2).

5 (2) DEVELOPMENT.—(A) Before drafting an
6 annual plan under this subsection, the Secretary
7 shall solicit specific written recommendations from
8 the program consortium for each element to be ad-
9 dressed in the plan, including those described in
10 paragraph (4). The Secretary may request that the
11 program consortium submit its recommendations in
12 the form of a draft annual plan.

13 (B) The Secretary shall submit the rec-
14 ommendations of the program consortium under
15 subparagraph (A) to the Ultra-Deepwater Advisory
16 Committee established under section 148(a) for re-
17 view, and such Advisory Committee shall provide to
18 the Secretary written comments by a date deter-
19 mined by the Secretary. The Secretary may also so-
20 licit comments from any other experts.

21 (C) The Secretary shall consult regularly with
22 the program consortium throughout the preparation
23 of the annual plan.

24 (3) PUBLICATION.—The Secretary shall trans-
25 mit to the Congress and publish in the Federal Reg-



1 ister the annual plan, along with any written com-
2 ments received under paragraph (2)(A) and (B).
3 The annual plan shall be transmitted and published
4 not later than 60 days after the date of enactment
5 of an Act making appropriations for a fiscal year for
6 the program under this section.

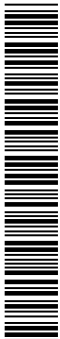
7 (4) CONTENTS.—The annual plan shall describe
8 the ongoing and prospective activities of the pro-
9 gram under this section and shall include—

10 (A) a list of any solicitations for awards
11 that the Secretary plans to issue to carry out
12 research, development, demonstration, or com-
13 mercial application activities, including the top-
14 ics for such work, who would be eligible to
15 apply, selection criteria, and the duration of
16 awards; and

17 (B) a description of the activities expected
18 of the program consortium to carry out sub-
19 section (f)(4).

20 (f) AWARDS.—

21 (1) IN GENERAL.—The Secretary shall make
22 awards to carry out research, development, dem-
23 onstration, and commercial application activities
24 under the program under this section. The program
25 consortium shall not be eligible to receive such



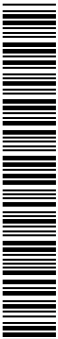
1 awards, but members of the program consortium
2 may receive such awards.

3 (2) PROPOSALS.—The Secretary shall solicit
4 proposals for awards under this subsection in such
5 manner and at such time as the Secretary may pre-
6 scribe, in consultation with the program consortium.

7 (3) REVIEW.—The Secretary shall make awards
8 under this subsection through a competitive process,
9 which shall include a review by individuals selected
10 by the Secretary. Such individuals shall include, for
11 each application, Federal officials, the program con-
12 sortium, and non-Federal experts who are not board
13 members, officers, or employees of the program con-
14 sortium or of a member of the program consortium.

15 (4) OVERSIGHT.—(A) The program consortium
16 shall oversee the implementation of awards under
17 this subsection, consistent with the annual plan
18 under subsection (e), including disbursing funds and
19 monitoring activities carried out under such awards
20 for compliance with the terms and conditions of the
21 awards.

22 (B) Nothing in subparagraph (A) shall limit the
23 authority or responsibility of the Secretary to over-
24 see awards, or limit the authority of the Secretary
25 to review or revoke awards.



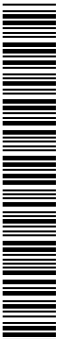
1 (C) The Secretary shall provide to the program
2 consortium the information necessary for the pro-
3 gram consortium to carry out its responsibilities
4 under this paragraph.

5 (g) FEE.—

6 (1) IN GENERAL.—To compensate the program
7 consortium for carrying out its activities under this
8 section, the Secretary shall provide to the program
9 consortium a fee in an amount not to exceed 7.5
10 percent of the amounts awarded under subsection (f)
11 for each fiscal year.

12 (2) ADVANCE.—The Secretary shall advance
13 funds to the program consortium upon selection of
14 the consortium, which shall be deducted from
15 amounts to be provided under paragraph (1).

16 (h) AUDIT.—The Secretary shall retain an inde-
17 pendent, commercial auditor to determine the extent to
18 which funds provided to the program consortium, and
19 funds provided under awards made under subsection (f),
20 have been expended in a manner consistent with the pur-
21 poses and requirements of this part. The auditor shall
22 transmit a report annually to the Secretary, who shall
23 transmit the report to Congress, along with a plan to rem-
24 edy any deficiencies cited in the report.



1 **SEC. 146. UNCONVENTIONAL NATURAL GAS AND OTHER PE-**
2 **TROLEUM RESOURCES PROGRAM.**

3 (a) IN GENERAL.—The Secretary shall carry out ac-
4 tivities under section 144(b)(3), to maximize the value of
5 the onshore unconventional natural gas and other petro-
6 leum resources of the United States by increasing the sup-
7 ply of such resources and by reducing the cost and increas-
8 ing the efficiency of exploration for and production of such
9 resources, while improving safety and minimizing environ-
10 mental impacts.

11 (b) AWARDS.—

12 (1) IN GENERAL.—The Secretary shall carry
13 out this section through awards made through an
14 open, competitive process.

15 (2) CONSORTIA.—In carrying out paragraph
16 (1), the Secretary shall give preference to making
17 awards to consortia.

18 (c) AUDIT.—The Secretary shall retain an inde-
19 pendent, commercial auditor to determine the extent to
20 which funds provided under awards made under this sec-
21 tion have been expended in a manner consistent with the
22 purposes and requirements of this part. The auditor shall
23 transmit a report annually to the Secretary, who shall
24 transmit the report to Congress, along with a plan to rem-
25 edy any deficiencies cited in the report.



1 (d) FOCUS AREAS.—Awards under this section may
2 focus on areas including advanced coal-bed methane, deep
3 drilling, natural gas production from tight sands, natural
4 gas production from gas shales, innovative exploration and
5 production techniques, enhanced recovery techniques, and
6 environmental mitigation of unconventional natural gas
7 and other petroleum resources exploration and production.

8 (e) ACTIVITIES BY THE UNITED STATES GEOLOGI-
9 CAL SURVEY.—The Secretary of the Interior, through the
10 United States Geological Survey, shall, where appropriate,
11 carry out programs of long-term research to complement
12 the programs under this section.

13 **SEC. 147. ADDITIONAL REQUIREMENTS FOR AWARDS.**

14 (a) DEMONSTRATION PROJECTS.—An application for
15 an award under this part for a demonstration project shall
16 describe with specificity the intended commercial use of
17 the technology to be demonstrated.

18 (b) FLEXIBILITY IN LOCATING DEMONSTRATION
19 PROJECTS.—Subject to the limitation in section 144(c),
20 a demonstration project under this part relating to an
21 ultra-deepwater technology or an ultra-deepwater architec-
22 ture may be conducted in deepwater depths.

23 (c) INTELLECTUAL PROPERTY AGREEMENTS.—If an
24 award under this part is made to a consortium (other than
25 the program consortium), the consortium shall provide to



1 the Secretary a signed contract agreed to by all members
2 of the consortium describing the rights of each member
3 to intellectual property used or developed under the award.

4 (d) TECHNOLOGY TRANSFER.—Each recipient of an
5 award under this part shall conduct technology transfer
6 activities, as appropriate, and outreach activities pursuant
7 to section 190.

8 (e) COST-SHARING REDUCTION FOR INDEPENDENT
9 PRODUCERS.—In applying the cost-sharing requirements
10 under section 182 to an award under this part made solely
11 to an independent producer of oil or gas, the Secretary
12 may reduce the applicable non-Federal requirement in
13 such section to a level not less than 10 percent of the cost
14 of the project.

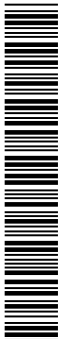
15 **SEC. 148. ADVISORY COMMITTEES.**

16 (a) ULTRA-DEEPWATER ADVISORY COMMITTEE.—

17 (1) ESTABLISHMENT.—Not later than 270 days
18 after the date of enactment of this section, the Sec-
19 retary shall establish an advisory committee to be
20 known as the Ultra-Deepwater Advisory Committee.

21 (2) MEMBERSHIP.—The advisory committee
22 under this subsection shall be composed of members
23 appointed by the Secretary and including—

24 (A) individuals with extensive research ex-
25 perience or operational knowledge of offshore



1 natural gas and other petroleum exploration
2 and production;

3 (B) individuals broadly representative of
4 the affected interests in ultra-deepwater natural
5 gas and other petroleum production, including
6 interests in environmental protection and safe
7 operations;

8 (C) no individuals who are Federal employ-
9 ees; and

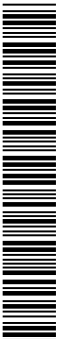
10 (D) no individuals who are board members,
11 officers, or employees of the program consor-
12 tium.

13 (3) DUTIES.—The advisory committee under
14 this subsection shall—

15 (A) advise the Secretary on the develop-
16 ment and implementation of programs under
17 this part related to ultra-deepwater natural gas
18 and other petroleum resources; and

19 (B) carry out section 145(e)(2)(B).

20 (4) COMPENSATION.—A member of the advi-
21 sory committee under this subsection shall serve
22 without compensation but shall receive travel ex-
23 penses, including per diem in lieu of subsistence, in
24 accordance with applicable provisions under sub-



1 chapter I of chapter 57 of title 5, United States
2 Code.

3 (b) UNCONVENTIONAL RESOURCES TECHNOLOGY
4 ADVISORY COMMITTEE.—

5 (1) ESTABLISHMENT.—Not later than 270 days
6 after the date of enactment of this section, the Sec-
7 retary shall establish an advisory committee to be
8 known as the Unconventional Resources Technology
9 Advisory Committee.

10 (2) MEMBERSHIP.—The advisory committee
11 under this subsection shall be composed of members
12 appointed by the Secretary and including—

13 (A) individuals with extensive research ex-
14 perience or operational knowledge of unconven-
15 tional natural gas and other petroleum resource
16 exploration and production, including inde-
17 pendent oil and gas producers;

18 (B) individuals broadly representative of
19 the affected interests in unconventional natural
20 gas and other petroleum resource exploration
21 and production, including interests in environ-
22 mental protection and safe operations; and

23 (C) no individuals who are Federal employ-
24 ees.



1 (3) DUTIES.—The advisory committee under
2 this subsection shall advise the Secretary on the de-
3 velopment and implementation of activities under
4 this part related to unconventional natural gas and
5 other petroleum resources.

6 (4) COMPENSATION.—A member of the advi-
7 sory committee under this subsection shall serve
8 without compensation but shall receive travel ex-
9 penses, including per diem in lieu of subsistence, in
10 accordance with applicable provisions under sub-
11 chapter I of chapter 57 of title 5, United States
12 Code.

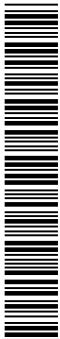
13 (c) PROHIBITION.—No advisory committee estab-
14 lished under this section shall make recommendations on
15 funding awards to consortia or for specific projects.

16 **SEC. 149. LIMITS ON PARTICIPATION.**

17 (a) IN GENERAL.—An entity shall be eligible to re-
18 ceive an award under this part only if the Secretary
19 finds—

20 (1) that the entity's participation in the pro-
21 gram under this part would be in the economic in-
22 terest of the United States; and

23 (2) that either—



1 (A) the entity is a United States-owned en-
2 tity organized under the laws of the United
3 States; or

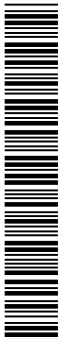
4 (B) the entity is organized under the laws
5 of the United States and has a parent entity or-
6 ganized under the laws of a country which
7 affords—

8 (i) to United States-owned entities op-
9 portunities, comparable to those afforded
10 to any other entity, to participate in any
11 cooperative research venture similar to
12 those authorized under this part;

13 (ii) to United States-owned entities
14 local investment opportunities comparable
15 to those afforded to any other entity; and

16 (iii) adequate and effective protection
17 for the intellectual property rights of
18 United States-owned entities.

19 (b) SENSE OF CONGRESS AND REPORT.—It is the
20 Sense of the Congress that ultra-deepwater technology de-
21 veloped under this part is to be developed primarily for
22 production of ultra-deepwater natural gas and other petro-
23 leum resources of the United States, and that this priority
24 is to be reflected in the terms of grants, contracts, and
25 cooperative agreements entered under this part. As part



1 of the annual Departmental budget submission, the Sec-
2 retary shall report on all steps taken to implement the pol-
3 icy described in this subsection.

4 **SEC. 150. FUND.**

5 There is hereby established in the Treasury of the
6 United States a separate fund to be known as the “Ultra-
7 Deepwater and Unconventional Natural Gas and Other
8 Petroleum Research Fund”.

9 **SEC. 151. SUNSET.**

10 The authority provided by this part shall terminate
11 on September 30, 2010.

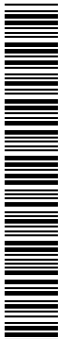
12 **SEC. 152. DEFINITIONS.**

13 In this section:

14 (1) DEEPWATER.—The term “deepwater”
15 means a water depth that is greater than 200 but
16 less than 1,500 meters.

17 (2) PROGRAM CONSORTIUM.—The term “pro-
18 gram consortium” means the consortium selected
19 under section 145(d).

20 (3) REMOTE OR INCONSEQUENTIAL.—The term
21 “remote or inconsequential” has the meaning given
22 that term in regulations issued by the Office of Gov-
23 ernment Ethics under section 208(b)(2) of title 18,
24 United States Code.



1 (4) ULTRA-DEEPWATER.—The term “ultra-
2 deepwater” means a water depth that is equal to or
3 greater than 1,500 meters.

4 (5) ULTRA-DEEPWATER ARCHITECTURE.—The
5 term “ultra-deepwater architecture” means the inte-
6 gration of technologies for the exploration for, or
7 production of, natural gas or other petroleum re-
8 sources located at ultra-deepwater depths.

9 (6) ULTRA-DEEPWATER TECHNOLOGY.—The
10 term “ultra-deepwater technology” means a discrete
11 technology that is specially suited to address one or
12 more challenges associated with the exploration for,
13 or production of, natural gas or other petroleum re-
14 sources located at ultra-deepwater depths.

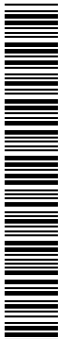
15 (7) UNCONVENTIONAL NATURAL GAS AND
16 OTHER PETROLEUM RESOURCE.—The term “uncon-
17 ventional natural gas and other petroleum resource”
18 means natural gas and other petroleum resource lo-
19 cated onshore in an economically inaccessible geo-
20 logical formation.

21 **Subtitle F—Science**

22 **PART 1—AUTHORIZATION OF APPROPRIATIONS**

23 **SEC. 161. SCIENCE.**

24 (a) IN GENERAL.—The following sums are author-
25 ized to be appropriated to the Secretary for research, de-



1 velopment, demonstration, and commercial application ac-
2 tivities of the Office of Science, including activities author-
3 ized under this subtitle, including the amounts authorized
4 under the amendment made by section 170(c)(2)(C)(ii),
5 and including basic energy sciences, advanced scientific
6 and computing research, biological and environmental re-
7 search, fusion energy sciences, high energy physics, nu-
8 clear physics, and research analysis and infrastructure
9 support:

10 (1) For fiscal year 2003, \$3,350,000,000.

11 (2) For fiscal year 2004, \$3,785,000,000.

12 (3) For fiscal year 2005, \$4,153,000,000.

13 (4) For fiscal year 2006, \$4,586,000,000.

14 (5) For fiscal year 2007, \$5,000,000,000.

15 (b) ALLOCATIONS.—From amounts authorized under
16 subsection (a), the following sums are authorized:

17 (1) FUSION ENERGY SCIENCES.—For activities
18 of the Fusion Energy Sciences Program, including
19 activities under sections 162 and 163—

20 (A) for fiscal year 2003, \$300,000,000;

21 (B) for fiscal year 2004, \$335,000,000;

22 (C) for fiscal year 2005, \$349,000,000;

23 (D) for fiscal year 2006, \$362,000,000;

24 and

25 (E) for fiscal year 2007, \$377,000,000.



1 (2) SPALLATION NEUTRON SOURCE.—

2 (A) CONSTRUCTION.—For construction of
3 the Spallation Neutron Source—

4 (i) for fiscal year 2003, \$210,571,000;

5 (ii) for fiscal year 2004,
6 \$124,600,000;

7 (iii) for fiscal year 2005, \$79,800,000;

8 and

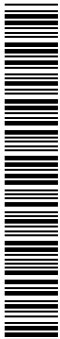
9 (iv) for fiscal year 2006, \$41,100,000
10 for completion of construction.

11 (B) OTHER PROJECT FUNDING.—For
12 other project costs (including research and de-
13 velopment necessary to complete the project,
14 preoperations costs, and capital equipment re-
15 lated to construction) of the Spallation Neutron
16 Source, \$103,279,000 for the period encom-
17 passing fiscal years 2003 through 2006, to re-
18 main available until expended through Sep-
19 tember 30, 2006.

20 (3) NANOSCALE SCIENCE AND ENGINEERING
21 RESEARCH.—

22 (A) TOTAL AUTHORIZATION.—For activi-
23 ties under section 169—

24 (i) for fiscal year 2003, \$135,000,000;

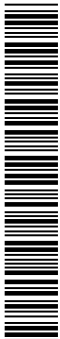


- 1 (ii) for fiscal year 2004,
2 \$270,000,000;
3 (iii) for fiscal year 2005,
4 \$290,000,000;
5 (iv) for fiscal year 2006,
6 \$310,000,000; and
7 (v) for fiscal year 2007,
8 \$330,000,000.

9 (B) RESEARCH CENTERS AND MAJOR IN-
10 STRUMENTATION.—From the amounts author-
11 ized under subparagraph (A), the following
12 sums are authorized to be appropriated to carry
13 out section 169(c):

- 14 (i) For fiscal year 2004,
15 \$135,000,000.
16 (ii) For fiscal year 2005,
17 \$150,000,000.
18 (iii) For fiscal year 2006,
19 \$120,000,000.
20 (iv) For fiscal year 2007,
21 \$100,000,000.

22 (c) LIMITS ON USE OF FUNDS.—Of the funds au-
23 thorized under subsection (b)(1), no funds shall be avail-
24 able for implementation of the plans described in sections
25 162 and 163.



1 **PART 2—FUSION ENERGY SCIENCES**

2 **SEC. 162. PLAN FOR FUSION EXPERIMENT.**

3 (a) PLAN FOR UNITED STATES FUSION EXPERI-
4 MENT.—The Secretary, after consultation with the Fusion
5 Energy Sciences Advisory Committee, shall develop a plan
6 for construction in the United States of a magnetic fusion
7 burning plasma experiment for the purpose of accelerating
8 scientific understanding of fusion plasmas. The Secretary
9 shall request a review of the plan by the National Academy
10 of Sciences, and shall transmit the plan and the review
11 to the Congress by July 1, 2004.

12 (b) REQUIREMENTS OF PLAN.—The plan described
13 in subsection (a) shall—

14 (1) address key burning plasma physics issues;
15 and

16 (2) include specific information on the scientific
17 capabilities of the proposed experiment, the rel-
18 evance of these capabilities to the goal of practical
19 fusion energy, and the overall design of the experi-
20 ment including its estimated cost and potential con-
21 struction sites.

22 (c) UNITED STATES PARTICIPATION IN AN INTER-
23 NATIONAL EXPERIMENT.—In addition to the plan de-
24 scribed in subsection (a), the Secretary, after consultation
25 with the Fusion Energy Sciences Advisory Committee,
26 may also develop a plan for United States participation



1 in an international burning plasma experiment for the
2 same purpose, whose construction is found by the Sec-
3 retary to be highly likely and where United States partici-
4 pation is cost effective relative to the cost and scientific
5 benefits of a domestic experiment described in subsection
6 (a). If the Secretary elects to develop a plan under this
7 subsection, it shall include the information described in
8 subsection (b), and an estimate of the cost of United
9 States participation in such an international experiment.
10 The Secretary shall request a review by the National
11 Academy of Sciences of a plan developed under this sub-
12 section, and shall transmit the plan and the review to the
13 Congress not later than July 1, 2004.

14 (d) AUTHORIZATION OF RESEARCH AND DEVELOP-
15 MENT.—The Secretary, through the Office of Science,
16 may conduct any research and development necessary to
17 fully develop the plans described in this section.

18 **SEC. 163. PLAN FOR FUSION ENERGY SCIENCES PROGRAM.**

19 Not later than 6 months after the date of the enact-
20 ment of this Act, the Secretary, after consultation with
21 the Fusion Energy Sciences Advisory Committee, shall de-
22 velop and transmit to the Congress a plan for the purpose
23 of ensuring a strong scientific base for the Fusion Energy
24 Sciences Program and to enable the experiments described
25 in section 162. Such plan shall include as its objectives—



1 (1) to ensure that existing fusion research fa-
2 cilities and equipment are more fully utilized with
3 appropriate measurements and control tools;

4 (2) to ensure a strengthened fusion science the-
5 ory and computational base;

6 (3) to ensure that the selection of and funding
7 for new magnetic and inertial fusion research facili-
8 ties are based on scientific innovation and cost effec-
9 tiveness;

10 (4) to improve the communication of scientific
11 results and methods between the fusion science com-
12 munity and the wider scientific community;

13 (5) to ensure that adequate support is provided
14 to optimize the design of the magnetic fusion burn-
15 ing plasma experiments referred to in section 162;

16 (6) to ensure that inertial confinement fusion
17 facilities are utilized to the extent practicable for the
18 purpose of inertial fusion energy research and devel-
19 opment; and

20 (7) to develop a fusion-based energy source.

21 **PART 3—SPALLATION NEUTRON SOURCE**

22 **SEC. 164. DEFINITION.**

23 For the purposes of this part, the term “Spallation
24 Neutron Source” means Department Project 99–E–334,
25 Oak Ridge National Laboratory, Oak Ridge, Tennessee.



1 **SEC. 165. REPORT.**

2 The Secretary shall report on the Spallation Neutron
3 Source as part of the Department's annual budget submis-
4 sion, including a description of the achievement of mile-
5 stones, a comparison of actual costs to estimated costs,
6 and any changes in estimated project costs or schedule.

7 **SEC. 166. LIMITATIONS.**

8 The total amount obligated by the Department, in-
9 cluding prior year appropriations, for the Spallation Neu-
10 tron Source may not exceed—

- 11 (1) \$1,192,700,000 for costs of construction;
12 (2) \$219,000,000 for other project costs; and
13 (3) \$1,411,700,000 for total project cost.

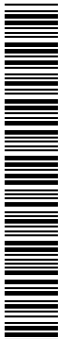
14 **PART 4—MISCELLANEOUS**

15 **SEC. 167. FACILITY AND INFRASTRUCTURE SUPPORT FOR**
16 **NONMILITARY ENERGY LABORATORIES.**

17 (a) FACILITY POLICY.—The Secretary shall develop
18 and implement a strategy for the nonmilitary energy lab-
19 oratories and facilities of the Office of Science. Such strat-
20 egy shall provide a cost-effective means for—

- 21 (1) maintaining existing facilities and infra-
22 structure, as needed;
23 (2) closing unneeded facilities;
24 (3) making facility modifications; and
25 (4) building new facilities.

26 (b) REPORT.—



1 (1) TRANSMITTAL.—The Secretary shall pre-
2 pare and transmit, along with the President’s budget
3 request to the Congress for fiscal year 2005, a re-
4 port containing the strategy developed under sub-
5 section (a).

6 (2) CONTENTS.—For each nonmilitary energy
7 laboratory and facility, such report shall contain—

8 (A) the current priority list of proposed fa-
9 cilities and infrastructure projects, including
10 cost and schedule requirements;

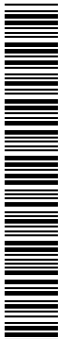
11 (B) a current ten-year plan that dem-
12 onstrates the reconfiguration of its facilities and
13 infrastructure to meet its missions and to ad-
14 dress its long-term operational costs and return
15 on investment;

16 (C) the total current budget for all facili-
17 ties and infrastructure funding; and

18 (D) the current status of each facilities
19 and infrastructure project compared to the
20 original baseline cost, schedule, and scope.

21 **SEC. 168. RESEARCH REGARDING PRECIOUS METAL CATAL-**
22 **YSIS.**

23 From the amounts authorized to be appropriated to
24 the Secretary under section 161, such sums as may be
25 necessary for each of the fiscal years 2003, 2004, and



1 2005 may be used to carry out research in the use of pre-
2 cious metals (excluding platinum, palladium, and rho-
3 dium) in catalysis.

4 **SEC. 169. NANOSCALE SCIENCE AND ENGINEERING RE-**
5 **SEARCH.**

6 (a) ESTABLISHMENT.—The Secretary, acting
7 through the Office of Science, shall support a program of
8 research, development, demonstration, and commercial ap-
9 plication in nanoscience and nanoengineering. The pro-
10 gram shall include efforts to further the understanding of
11 the chemistry, physics, materials science, and engineering
12 of phenomena on the scale of 1 to 100 nanometers.

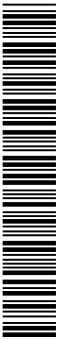
13 (b) DUTIES OF THE OFFICE OF SCIENCE.—In car-
14 rying out the program under this section, the Office of
15 Science shall—

16 (1) support both individual investigators and
17 teams of investigators, including multidisciplinary
18 teams;

19 (2) carry out activities under subsection (c);

20 (3) support technology transfer activities to
21 benefit industry and other users of nanoscience and
22 nanoengineering; and

23 (4) coordinate research and development activi-
24 ties with industry and other Federal agencies.



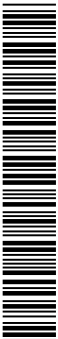
1 (c) NANOSCIENCE AND NANOENGINEERING RE-
2 SEARCH CENTERS AND MAJOR INSTRUMENTATION.—

3 (1) IN GENERAL.—The Secretary shall carry
4 out projects to develop, plan, construct, acquire, op-
5 erate, or support special equipment, instrumenta-
6 tion, or facilities for investigators conducting re-
7 search and development in nanoscience and
8 nanoengineering.

9 (2) PROJECTS.—Projects under paragraph (1)
10 may include the measurement of properties at the
11 scale of 1 to 100 nanometers, manipulation at such
12 scales, and the integration of technologies based on
13 nanoscience or nanoengineering into bulk materials
14 or other technologies.

15 (3) FACILITIES.—Facilities under paragraph
16 (1) may include electron microcharacterization facili-
17 ties, microlithography facilities, scanning probe fa-
18 cilities, and related instrumentation.

19 (4) COLLABORATION.—The Secretary shall en-
20 courage collaborations among institutions of higher
21 education, laboratories, and industry at facilities
22 under this subsection.



1 **SEC. 170. ADVANCED SCIENTIFIC COMPUTING FOR ENERGY**
2 **MISSIONS.**

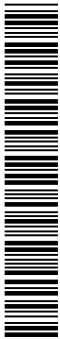
3 (a) IN GENERAL.—The Secretary, acting through the
4 Office of Science, shall support a program to advance the
5 Nation's computing capability across a diverse set of
6 grand challenge computationally based science problems
7 related to departmental missions.

8 (b) DUTIES OF THE OFFICE OF SCIENCE.—In car-
9 rying out the program under this section, the Office of
10 Science shall—

11 (1) advance basic science through computation
12 by developing software to solve grand challenge
13 science problems on new generations of computing
14 platforms;

15 (2) enhance the foundations for scientific com-
16 puting by developing the basic mathematical and
17 computing systems software needed to take full ad-
18 vantage of the computing capabilities of computers
19 with peak speeds of 100 teraflops or more, some of
20 which may be unique to the scientific problem of in-
21 terest;

22 (3) enhance national collaboratory and net-
23 working capabilities by developing software to inte-
24 grate geographically separated researchers into ef-
25 fective research teams and to facilitate access to and
26 movement and analysis of large (petabyte) data sets;



1 (4) maintain a robust scientific computing
2 hardware infrastructure to ensure that the com-
3 puting resources needed to address departmental
4 missions are available; and

5 (5) explore new computing approaches and
6 technologies that promise to advance scientific com-
7 puting.

8 (c) HIGH-PERFORMANCE COMPUTING ACT OF 1991
9 AMENDMENTS.—The High-Performance Computing Act
10 of 1991 is amended—

11 (1) in section 4 (15 U.S.C. 5503)—

12 (A) in paragraph (3)—

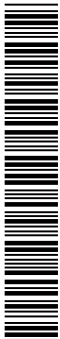
13 (i) by striking “means” and inserting
14 “and ‘networking and information tech-
15 nology’ mean”; and

16 (ii) by striking “(including vector
17 supercomputers and large scale parallel
18 systems)”; and

19 (B) in paragraph (4), by striking “packet
20 switched”; and

21 (2) in section 203 (15 U.S.C. 5523)—

22 (A) in subsection (a), by striking all after
23 “As part of the” and inserting “Networking
24 and Information Technology Research and De-
25 velopment Program, the Secretary of Energy



1 shall conduct basic and applied research in net-
2 working and information technology, with em-
3 phasis on—

4 “(1) supporting fundamental research in the
5 physical sciences and engineering, and energy appli-
6 cations;

7 “(2) providing supercomputer access and ad-
8 vanced communication capabilities and facilities to
9 scientific researchers; and

10 “(3) developing tools for distributed scientific
11 collaboration.”;

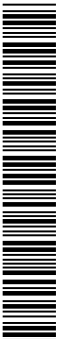
12 (B) in subsection (b), by striking “Pro-
13 gram” and inserting “Networking and Informa-
14 tion Technology Research and Development
15 Program”; and

16 (C) in subsection (e)—

17 (i) by striking “(1)”;

18 (ii) by striking “the Program” and all
19 that follows through “fiscal year 1996”
20 and inserting “carrying out this section
21 \$285,000,000 for fiscal year 2003,
22 \$300,000,000 for fiscal year 2004,
23 \$310,000,000 for fiscal year 2005, and
24 \$320,000,000 for fiscal year 2006”; and

25 (iii) by striking paragraph (2).



1 (d) COORDINATION.—The Secretary shall ensure that
2 the program under this section is integrated and con-
3 sistent with—

4 (1) the Accelerated Strategic Computing Initia-
5 tive of the National Nuclear Security Administra-
6 tion; and

7 (2) other national efforts related to advanced
8 scientific computing for science and engineering.

9 (e) REPORT.—(1) Before undertaking any new initia-
10 tive to develop new advanced architecture for high-speed
11 computing, the Secretary, through the Director of the Of-
12 fice of Science, shall transmit a report to the Congress
13 describing—

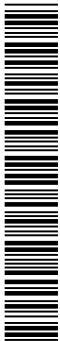
14 (A) the expected duration and cost of the initia-
15 tive;

16 (B) the technical milestones the initiative is de-
17 signed to achieve;

18 (C) how institutions of higher education and
19 private firms will participate in the initiative; and

20 (D) why the goals of the initiative could not be
21 achieved through existing programs.

22 (2) No funds may be expended on any initiative de-
23 scribed in paragraph (1) until 30 days after the report
24 required by that paragraph is transmitted to the Congress.



1 **Subtitle G—Energy and**
2 **Environment**

3 **SEC. 171. AUTHORIZATION OF APPROPRIATIONS.**

4 (a) UNITED STATES-MEXICO ENERGY TECHNOLOGY
5 COOPERATION.—The following sums are authorized to be
6 appropriated to the Secretary to carry out activities under
7 section 172:

8 (1) For fiscal year 2003, \$5,000,000.

9 (2) For fiscal year 2004, \$5,000,000.

10 (3) For fiscal year 2005, \$6,000,000.

11 (4) For fiscal year 2006, \$6,000,000.

12 (5) For fiscal year 2007, \$6,000,000.

13 (b) WASTE REDUCTION AND USE OF ALTER-
14 NATIVES.—There are authorized to be appropriated to the
15 Secretary to carry out activities under section 173,
16 \$500,000 for fiscal year 2003.

17 **SEC. 172. UNITED STATES-MEXICO ENERGY TECHNOLOGY**
18 **COOPERATION.**

19 (a) PROGRAM.—The Secretary shall establish a re-
20 search, development, demonstration, and commercial ap-
21 plication program to be carried out in collaboration with
22 entities in Mexico and the United States to promote en-
23 ergy efficient, environmentally sound economic develop-
24 ment along the United States-Mexico border.



1 (b) PROGRAM MANAGEMENT.—The program under
2 subsection (a) shall be managed by the Department of En-
3 ergy Carlsbad Environmental Management Field Office.

4 (c) TECHNOLOGY TRANSFER.—In carrying out
5 projects and activities under this section, the Secretary
6 shall assess the applicability of technology developed under
7 the Environmental Management Science Program of the
8 Department.

9 (d) INTELLECTUAL PROPERTY.—In carrying out this
10 section, the Secretary shall comply with the requirements
11 of any agreement entered into between the United States
12 and Mexico regarding intellectual property protection.

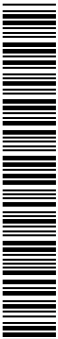
13 **SEC. 173. WASTE REDUCTION AND USE OF ALTERNATIVES.**

14 (a) GRANT AUTHORITY.—The Secretary is author-
15 ized to make a single grant to a qualified institution to
16 examine and develop the feasibility of burning post-con-
17 sumer carpet in cement kilns as an alternative energy
18 source. The purposes of the grant shall include
19 determining—

20 (1) how post-consumer carpet can be burned
21 without disrupting kiln operations;

22 (2) the extent to which overall kiln emissions
23 may be reduced;

24 (3) the emissions of air pollutants and other
25 relevant environmental impacts; and



1 (4) how this process provides benefits to both
2 cement kiln operations and carpet suppliers.

3 (b) QUALIFIED INSTITUTION.—For the purposes of
4 subsection (a), a qualified institution is a research-inten-
5 sive institution of higher education with demonstrated ex-
6 pertise in the fields of fiber recycling and logistical mod-
7 eling of carpet waste collection and preparation.

8 **SEC. 174. COAL GASIFICATION.**

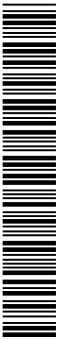
9 The Secretary is authorized to provide loan guaran-
10 tees for a project to produce energy from a plant using
11 integrated gasification combined cycle technology of at
12 least 400 megawatts in capacity that produces power at
13 competitive rates in deregulated energy generation mar-
14 kets and that does not receive any subsidy (direct or indi-
15 rect) from ratepayers.

16 **SEC. 175. PETROLEUM COKE GASIFICATION.**

17 The Secretary is authorized to provide loan guaran-
18 tees for at least one petroleum coke gasification
19 polygeneration project.

20 **SEC. 176. OTHER BIOPOWER AND BIOENERGY.**

21 The Secretary shall conduct a program to assist in
22 the planning, design, and implementation of projects to
23 convert rice straw, rice hulls, sugarcane bagasse, forest
24 thinnings, and barley grain into biopower and biofuels.



1 **SEC. 177. TECHNOLOGY TRANSFER.**

2 There are authorized to be appropriated to the Sec-
3 retary \$1,000,000 for a competitively awarded contract,
4 to an entity with offshore oil and gas management experi-
5 ence, for the transfer of technologies relating to ultra-
6 deepwater research and development developed at the
7 Naval Surface Warfare Center, Carderock Division.

8 **SEC. 178. COAL TECHNOLOGY LOAN.**

9 There are authorized to be appropriated to the Sec-
10 retary \$125,000,000 to provide a loan to the owner of the
11 experimental plant constructed under United States De-
12 partment of Energy cooperative agreement number DE-
13 FC22-91PC99544 on such terms and conditions as the
14 Secretary determines, including interest rates and upfront
15 payments.

16 **Subtitle H—Management**

17 **SEC. 181. AVAILABILITY OF FUNDS.**

18 Funds authorized to be appropriated to the Depart-
19 ment under this title shall remain available until expended.

20 **SEC. 182. COST SHARING.**

21 (a) RESEARCH AND DEVELOPMENT.—Except as oth-
22 erwise provided in this title, for research and development
23 programs carried out under this title, the Secretary shall
24 require a commitment from non-Federal sources of at
25 least 20 percent of the cost of the project. The Secretary
26 may reduce or eliminate the non-Federal requirement



1 under this subsection if the Secretary determines that the
2 research and development is of a basic or fundamental na-
3 ture.

4 (b) DEMONSTRATION AND COMMERCIAL APPLICA-
5 TION.—Except as otherwise provided in this title, the Sec-
6 retary shall require at least 50 percent of the costs directly
7 and specifically related to any demonstration or commer-
8 cial application project under this title to be provided from
9 non-Federal sources. The Secretary may reduce the non-
10 Federal requirement under this subsection if the Secretary
11 determines that the reduction is necessary and appropriate
12 considering the technological risks involved in the project
13 and is necessary to meet the objectives of this title.

14 (c) CALCULATION OF AMOUNT.—In calculating the
15 amount of the non-Federal commitment under subsection
16 (a) or (b), the Secretary may include personnel, services,
17 equipment, and other resources.

18 **SEC. 183. MERIT REVIEW OF PROPOSALS.**

19 Awards of funds authorized under this title shall be
20 made only after an impartial review of the scientific and
21 technical merit of the proposals for such awards has been
22 carried out by or for the Department.



1 **SEC. 184. EXTERNAL TECHNICAL REVIEW OF DEPART-**
2 **MENTAL PROGRAMS.**

3 (a) NATIONAL ENERGY RESEARCH AND DEVELOP-
4 MENT ADVISORY BOARDS.—(1) The Secretary shall estab-
5 lish one or more advisory boards to review Department
6 research, development, demonstration, and commercial ap-
7 plication programs in the following areas:

8 (A) Energy efficiency.

9 (B) Renewable energy.

10 (C) Nuclear energy.

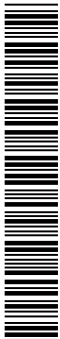
11 (D) Fossil energy.

12 (2) The Secretary may designate an existing advisory
13 board within the Department to fulfill the responsibilities
14 of an advisory board under this subsection, and may enter
15 into appropriate arrangements with the National Academy
16 of Sciences to establish such an advisory board.

17 (b) UTILIZATION OF EXISTING COMMITTEES.—The
18 Secretary shall continue to use the scientific program advi-
19 sory committees chartered under the Federal Advisory
20 Committee Act by the Office of Science to oversee research
21 and development programs under that Office.

22 (c) MEMBERSHIP.—Each advisory board under this
23 section shall consist of persons with appropriate expertise
24 representing a diverse range of interests.

25 (d) MEETINGS AND PURPOSES.—Each advisory
26 board under this section shall meet at least semi-annually

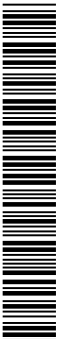


1 to review and advise on the progress made by the respec-
2 tive research, development, demonstration, and commer-
3 cial application program or programs. The advisory board
4 shall also review the measurable cost and performance-
5 based goals for such programs as established under sec-
6 tion 102, and the progress on meeting such goals.

7 (e) PERIODIC REVIEWS AND ASSESSMENTS.—The
8 Secretary shall enter into appropriate arrangements with
9 the National Academy of Sciences to conduct periodic re-
10 views and assessments of the programs authorized by this
11 title, the measurable cost and performance-based goals for
12 such programs as established under section 102, if any,
13 and the progress on meeting such goals. Such reviews and
14 assessments shall be conducted every 5 years, or more
15 often as the Secretary considers necessary, and the Sec-
16 retary shall transmit to the Congress reports containing
17 the results of all such reviews and assessments.

18 **SEC. 185. IMPROVED COORDINATION OF TECHNOLOGY**
19 **TRANSFER ACTIVITIES.**

20 (a) TECHNOLOGY TRANSFER COORDINATOR.—The
21 Secretary shall designate a Technology Transfer Coordi-
22 nator to perform oversight of and policy development for
23 technology transfer activities at the Department. The
24 Technology Transfer Coordinator shall coordinate the ac-
25 tivities of the Technology Transfer Working Group, and



1 shall oversee the expenditure of funds allocated to the
2 Technology Transfer Working Group, and shall coordinate
3 with each technology partnership ombudsman appointed
4 under section 11 of the Technology Transfer Commer-
5 cialization Act of 2000 (42 U.S.C. 7261c).

6 (b) TECHNOLOGY TRANSFER WORKING GROUP.—
7 The Secretary shall establish a Technology Transfer
8 Working Group, which shall consist of representatives of
9 the National Laboratories and single-purpose research fa-
10 cilities, to—

11 (1) coordinate technology transfer activities oc-
12 ccurring at National Laboratories and single-purpose
13 research facilities;

14 (2) exchange information about technology
15 transfer practices, including alternative approaches
16 to resolution of disputes involving intellectual prop-
17 erty rights and other technology transfer matters;
18 and

19 (3) develop and disseminate to the public and
20 prospective technology partners information about
21 opportunities and procedures for technology transfer
22 with the Department, including those related to al-
23 ternative approaches to resolution of disputes involv-
24 ing intellectual property rights and other technology
25 transfer matters.



1 (c) TECHNOLOGY TRANSFER RESPONSIBILITY.—
2 Nothing in this section shall affect the technology transfer
3 responsibilities of Federal employees under the Stevenson-
4 Wydler Technology Innovation Act of 1980.

5 **SEC. 186. TECHNOLOGY INFRASTRUCTURE PROGRAM.**

6 (a) ESTABLISHMENT.—The Secretary shall establish
7 a Technology Infrastructure Program in accordance with
8 this section.

9 (b) PURPOSE.—The purpose of the Technology Infra-
10 structure Program shall be to improve the ability of Na-
11 tional Laboratories and single-purpose research facilities
12 to support departmental missions by—

13 (1) stimulating the development of technology
14 clusters that can support departmental missions at
15 the National Laboratories or single-purpose research
16 facilities;

17 (2) improving the ability of National Labora-
18 tories and single-purpose research facilities to lever-
19 age and benefit from commercial research, tech-
20 nology, products, processes, and services; and

21 (3) encouraging the exchange of scientific and
22 technological expertise between National Labora-
23 tories or single-purpose research facilities and—

24 (A) institutions of higher education;

25 (B) technology-related business concerns;



1 (C) nonprofit institutions; and

2 (D) agencies of State, tribal, or local gov-
3 ernments,

4 that can support departmental missions at the Na-
5 tional Laboratories or single-purpose research facili-
6 ties.

7 (c) PROJECTS.—The Secretary shall authorize the
8 Director of each National Laboratory or single-purpose re-
9 search facility to implement the Technology Infrastructure
10 Program at such National Laboratory or facility through
11 projects that meet the requirements of subsections (d) and
12 (e).

13 (d) PROGRAM REQUIREMENTS.—Each project funded
14 under this section shall meet the following requirements:

15 (1) MINIMUM PARTICIPANTS.—Each project
16 shall at a minimum include one of the following enti-
17 ties:

18 (A) A business.

19 (B) An institution of higher education.

20 (C) A nonprofit institution.

21 (D) An agency of a State, local, or tribal
22 government.

23 (2) COST SHARING.—

24 (A) MINIMUM AMOUNT.—Not less than 50
25 percent of the costs of each project funded



1 under this section shall be provided from non-
2 Federal sources.

3 (B) QUALIFIED FUNDING AND RE-
4 SOURCES.—(i) The calculation of costs paid by
5 the non-Federal sources to a project shall in-
6 clude cash, personnel, services, equipment, and
7 other resources expended on the project.

8 (ii) Independent research and development
9 expenses of Government contractors that qual-
10 ify for reimbursement under section 31–205–
11 18(e) of the Federal Acquisition Regulations
12 issued pursuant to section 25(c)(1) of the Of-
13 fice of Federal Procurement Policy Act (41
14 U.S.C. 421(c)(1)) may be credited towards
15 costs paid by non-Federal sources to a project,
16 if the expenses meet the other requirements of
17 this section.

18 (iii) No funds or other resources expended
19 either before the start of a project under this
20 section or outside the project's scope of work
21 shall be credited toward the costs paid by the
22 non-Federal sources to the project.

23 (3) COMPETITIVE SELECTION.—All projects
24 under this section shall be competitively selected
25 using procedures determined by the Secretary.



1 (4) ACCOUNTING STANDARDS.—Any participant
2 that receives funds under this section may use gen-
3 erally accepted accounting principles for maintaining
4 accounts, books, and records relating to the project.

5 (5) LIMITATIONS.—No Federal funds shall be
6 made available under this section for—

7 (A) construction; or

8 (B) any project for more than 5 years.

9 (e) SELECTION CRITERIA.—

10 (1) THRESHOLD FUNDING CRITERIA.—The Sec-
11 retary shall allocate funds under this section only if
12 the Director of the National Laboratory or single-
13 purpose research facility managing the project deter-
14 mines that the project is likely to improve the ability
15 of the National Laboratory or single-purpose re-
16 search facility to achieve technical success in meet-
17 ing departmental missions.

18 (2) ADDITIONAL CRITERIA.—The Secretary
19 shall consider the following criteria in selecting a
20 project to receive Federal funds:

21 (A) The potential of the project to succeed,
22 based on its technical merit, team members,
23 management approach, resources, and project
24 plan.

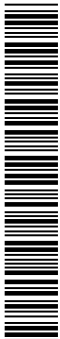


1 (B) The potential of the project to promote
2 the development of a commercially sustainable
3 technology cluster, which will derive most of the
4 demand for its products or services from the
5 private sector, and which will support depart-
6 mental missions at the participating National
7 Laboratory or single-purpose research facility.

8 (C) The potential of the project to promote
9 the use of commercial research, technology,
10 products, processes, and services by the partici-
11 pating National Laboratory or single-purpose
12 research facility to achieve its departmental
13 mission or the commercial development of tech-
14 nological innovations made at the participating
15 National Laboratory or single-purpose research
16 facility.

17 (D) The commitment shown by non-Fed-
18 eral organizations to the project, based pri-
19 marily on the nature and amount of the finan-
20 cial and other resources they will risk on the
21 project.

22 (E) The extent to which the project in-
23 volves a wide variety and number of institutions
24 of higher education, nonprofit institutions, and
25 technology-related business concerns that can



1 support the missions of the participating Na-
2 tional Laboratory or single-purpose research fa-
3 cility and that will make substantive contribu-
4 tions to achieving the goals of the project.

5 (F) The extent of participation in the
6 project by agencies of State, tribal, or local gov-
7 ernments that will make substantive contribu-
8 tions to achieving the goals of the project.

9 (G) The extent to which the project fo-
10 cuses on promoting the development of tech-
11 nology-related business concerns that are small
12 businesses or involves such small businesses
13 substantively in the project.

14 (H) Such other criteria as the Secretary
15 determines to be appropriate.

16 (f) ALLOCATION.—In allocating funds for projects
17 approved under this section, the Secretary shall provide—

18 (1) the Federal share of the project costs; and

19 (2) additional funds to the National Laboratory
20 or single-purpose research facility managing the
21 project to permit the National Laboratory or single-
22 purpose research facility to carry out activities relat-
23 ing to the project, and to coordinate such activities
24 with the project.



1 (g) REPORT TO CONGRESS.—Not later than January
2 1, 2005, the Secretary shall report to Congress on whether
3 the Technology Infrastructure Program should be contin-
4 ued and, if so, how the program should be managed.

5 (h) DEFINITIONS.—In this section:

6 (1) TECHNOLOGY CLUSTER.—The term “tech-
7 nology cluster” means a group of—

8 (A) technology-related business concerns;

9 (B) institutions of higher education; or

10 (C) other nonprofit institutions,

11 that reinforce each other’s performance in the areas
12 of technology development through formal or infor-
13 mal relationships.

14 (2) TECHNOLOGY-RELATED BUSINESS CON-
15 CERN.—The term “technology-related business con-
16 cern” means a for-profit corporation, company, asso-
17 ciation, firm, partnership, or small business concern
18 that—

19 (A) conducts scientific or engineering re-
20 search;

21 (B) develops new technologies;

22 (C) manufactures products based on new
23 technologies; or

24 (D) performs technological services.



1 (i) AUTHORIZATION OF APPROPRIATIONS.—There
2 are authorized to be appropriated to the Secretary for ac-
3 tivities under this section \$10,000,000 for each of fiscal
4 years 2003 and 2004.

5 **SEC. 187. SMALL BUSINESS ADVOCACY AND ASSISTANCE.**

6 (a) SMALL BUSINESS ADVOCATE.—The Secretary
7 shall require the Director of each National Laboratory,
8 and may require the Director of a single-purpose research
9 facility, to designate a small business advocate to—

10 (1) increase the participation of small business
11 concerns, including socially and economically dis-
12 advantaged small business concerns, in procurement,
13 collaborative research, technology licensing, and
14 technology transfer activities conducted by the Na-
15 tional Laboratory or single-purpose research facility;

16 (2) report to the Director of the National Lab-
17 oratory or single-purpose research facility on the ac-
18 tual participation of small business concerns in pro-
19 curement and collaborative research along with rec-
20 ommendations, if appropriate, on how to improve
21 participation;

22 (3) make available to small business concerns
23 training, mentoring, and clear, up-to-date informa-
24 tion on how to participate in the procurement and
25 collaborative research, including how to submit effec-



1 tive proposals, and information related to alternative
2 approaches to resolution of disputes involving intel-
3 lectual property rights and other technology transfer
4 matters;

5 (4) increase the awareness inside the National
6 Laboratory or single-purpose research facility of the
7 capabilities and opportunities presented by small
8 business concerns; and

9 (5) establish guidelines for the program under
10 subsection (b) and report on the effectiveness of
11 such program to the Director of the National Lab-
12 oratory or single-purpose research facility.

13 (b) ESTABLISHMENT OF SMALL BUSINESS ASSIST-
14 ANCE PROGRAM.—The Secretary shall require the Direc-
15 tor of each National Laboratory, and may require the Di-
16 rector of a single-purpose research facility, to establish a
17 program to provide small business concerns—

18 (1) assistance directed at making them more ef-
19 fective and efficient subcontractors or suppliers to
20 the National Laboratory or single-purpose research
21 facility; or

22 (2) general technical assistance, the cost of
23 which shall not exceed \$10,000 per instance of as-
24 sistance, to improve the small business concern's
25 products or services.



1 (c) USE OF FUNDS.—None of the funds expended
2 under subsection (b) may be used for direct grants to the
3 small business concerns.

4 (d) DEFINITIONS.—In this section:

5 (1) SMALL BUSINESS CONCERN.—The term
6 “small business concern” has the meaning given
7 such term in section 3 of the Small Business Act
8 (15 U.S.C. 632).

9 (2) SOCIALLY AND ECONOMICALLY DISADVAN-
10 TAGED SMALL BUSINESS CONCERNS.—The term “so-
11 cially and economically disadvantaged small business
12 concerns” has the meaning given such term in sec-
13 tion 8(a)(4) of the Small Business Act (15 U.S.C.
14 637(a)(4)).

15 **SEC. 188. MOBILITY OF SCIENTIFIC AND TECHNICAL PER-**
16 **SONNEL.**

17 Not later than 2 years after the date of enactment
18 of this section, the Secretary shall transmit a report to
19 the Congress identifying any policies or procedures of a
20 contractor operating a National Laboratory or single-pur-
21 pose research facility that create disincentives to the tem-
22 porary transfer of scientific and technical personnel
23 among the contractor-operated National Laboratories or
24 contractor-operated single-purpose research facilities.



1 **SEC. 189. NATIONAL ACADEMY OF SCIENCES REPORT.**

2 Within 90 days after the date of enactment of this
3 Act, the Secretary shall enter into an arrangement with
4 the National Academy of Sciences for the Academy to—

5 (1) conduct a study on—

6 (A) the obstacles to accelerating the re-
7 search, development, demonstration, and com-
8 mercial application cycle for energy technology;
9 and

10 (B) the adequacy of Department policies
11 and procedures for, and oversight of, technology
12 transfer-related disputes between contractors of
13 the Department and the private sector; and

14 (2) report to the Congress on recommendations
15 developed as a result of the study.

16 **SEC. 190. OUTREACH.**

17 The Secretary shall ensure that each program au-
18 thorized by this title includes an outreach component to
19 provide information, as appropriate, to manufacturers,
20 consumers, engineers, architects, builders, energy service
21 companies, institutions of higher education, facility plan-
22 ners and managers, State and local governments, and
23 other entities.

24 **SEC. 191. LIMITS ON USE OF FUNDS.**

25 (a) **COMPETITIVE PROCEDURE REQUIREMENT.—**

26 None of the funds authorized to be appropriated to the



1 Secretary by this title may be used to award a manage-
2 ment and operating contract for a nonmilitary energy lab-
3 oratory of the Department unless such contract is com-
4 petitively awarded or the Secretary grants, on a case-by-
5 case basis, a waiver to allow for such a deviation. The Sec-
6 retary may not delegate the authority to grant such a
7 waiver.

8 (b) CONGRESSIONAL NOTICE.—At least 2 months be-
9 fore a contract award for which the Secretary intends to
10 grant such a waiver, the Secretary shall submit to the
11 Congress a report notifying the Congress of the waiver
12 and setting forth the reasons for the waiver.

13 **SEC. 192. REPROGRAMMING.**

14 (a) DISTRIBUTION REPORT.—Not later than 60 days
15 after the date of the enactment of an Act appropriating
16 amounts authorized under this title, the Secretary shall
17 transmit to the appropriate authorizing committees of the
18 Congress a report explaining how such amounts will be
19 distributed among the authorizations contained in this
20 title.

21 (b) PROHIBITION.—(1) No amount identified under
22 subsection (a) shall be reprogrammed if such reprogram-
23 ming would result in an obligation which changes an indi-
24 vidual distribution required to be reported under sub-
25 section (a) by more than 5 percent unless the Secretary



1 has transmitted to the appropriate authorizing committees
2 of the Congress a report described in subsection (c) and
3 a period of 30 days has elapsed after such committees re-
4 ceive the report.

5 (2) In the computation of the 30-day period described
6 in paragraph (1), there shall be excluded any day on which
7 either House of Congress is not in session because of an
8 adjournment of more than 3 days to a day certain.

9 (c) REPROGRAMMING REPORT.—A report referred to
10 in subsection (b)(1) shall contain a full and complete
11 statement of the action proposed to be taken and the facts
12 and circumstances relied on in support of the proposed
13 action.

14 **SEC. 193. CONSTRUCTION WITH OTHER LAWS.**

15 Except as otherwise provided in this title, the Sec-
16 retary shall carry out the research, development, dem-
17 onstration, and commercial application programs,
18 projects, and activities authorized by this title in accord-
19 ance with the applicable provisions of the Atomic Energy
20 Act of 1954 (42 U.S.C. et seq.), the Federal Nonnuclear
21 Research and Development Act of 1974 (42 U.S.C. 5901
22 et seq.), the Energy Policy Act of 1992 (42 U.S.C. 13201
23 et seq.), the Stevenson-Wydler Technology Innovation Act
24 of 1980 (15 U.S.C. 3701 et seq.), chapter 18 of title 35,
25 United States Code (commonly referred to as the Bayh-



1 Dole Act), and any other Act under which the Secretary
2 is authorized to carry out such activities.

3 **TITLE II—DEPARTMENT OF**
4 **ENERGY MANAGEMENT**

5 **SEC. 201. IMPROVED COORDINATION AND MANAGEMENT**
6 **OF CIVILIAN SCIENCE AND TECHNOLOGY**
7 **PROGRAMS.**

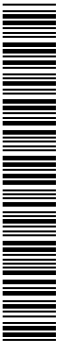
8 (a) RECONFIGURATION OF POSITION OF DIRECTOR
9 OF THE OFFICE OF SCIENCE.—Section 209 of the Depart-
10 ment of Energy Organization Act (41 U.S.C. 7139) is
11 amended to read as follows:

12 “OFFICE OF SCIENCE

13 “SEC. 209. (a) There shall be within the Department
14 an Office of Science, to be headed by an Assistant Sec-
15 retary of Science, who shall be appointed by the President,
16 by and with the advice and consent of the Senate, and
17 who shall be compensated at the rate provided for level
18 IV of the Executive Schedule under section 5315 of title
19 5, United States Code.

20 “(b) The Assistant Secretary of Science shall be in
21 addition to the Assistant Secretaries provided for under
22 section 203 of this Act.

23 “(c) It shall be the duty and responsibility of the As-
24 sistant Secretary of Science to carry out the fundamental



1 science and engineering research functions of the Depart-
2 ment, including the responsibility for policy and manage-
3 ment of such research, as well as other functions vested
4 in the Secretary which he may assign to the Assistant Sec-
5 retary.”.

6 (b) ADDITIONAL ASSISTANT SECRETARY POSITION
7 TO ENABLE IMPROVED MANAGEMENT OF NUCLEAR EN-
8 ERGY ISSUES.—(1) Section 203(a) of the Department of
9 Energy Organization Act (42 U.S.C. 7133(a)) is amended
10 by striking “There shall be in the Department six Assist-
11 ant Secretaries” and inserting “Except as provided in sec-
12 tion 209, there shall be in the Department seven Assistant
13 Secretaries”.

14 (2) It is the sense of the Congress that the leadership
15 for departmental missions in nuclear energy should be at
16 the Assistant Secretary level.

17 (c) TECHNICAL AND CONFORMING AMENDMENTS.—

18 (1) Section 5315 of title 5, United States Code, is amend-
19 ed by—

20 (A) striking “Director, Office of Science, De-
21 partment of Energy.”; and

22 (B) striking “Assistant Secretaries of Energy
23 (6)” and inserting “Assistant Secretaries of Energy
24 (8)”.



1 (2) The table of contents for the Department of En-
2 ergy Organization Act (42 U.S.C. 7101 note) is
3 amended—

4 (A) by striking “Section 209” and inserting
5 “Sec. 209”;

6 (B) by striking “213.” and inserting “Sec.
7 213.”;

8 (C) by striking “214.” and inserting “Sec.
9 214.”;

10 (D) by striking “215.” and inserting “Sec.
11 215.”; and

12 (E) by striking “216.” and inserting “Sec.
13 216.”.

14 **TITLE III—CLEAN SCHOOL**
15 **BUSES**

16 **SEC. 301. ESTABLISHMENT OF PILOT PROGRAM.**

17 (a) ESTABLISHMENT.—The Secretary of Energy, in
18 consultation with the Administrator of the Environmental
19 Protection Agency, shall establish a pilot program for
20 awarding grants on a competitive basis to eligible entities
21 for the demonstration and commercial application of alter-
22 native fuel school buses and ultra-low sulfur diesel school
23 buses.

24 (b) REQUIREMENTS.—Not later than 3 months after
25 the date of the enactment of this Act, the Secretary shall



1 establish and publish in the Federal register grant require-
2 ments on eligibility for assistance, and on implementation
3 of the program established under subsection (a), including
4 certification requirements to ensure compliance with this
5 title.

6 (c) SOLICITATION.—Not later than 6 months after
7 the date of the enactment of this Act, the Secretary shall
8 solicit proposals for grants under this section.

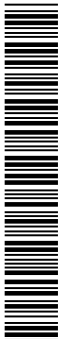
9 (d) ELIGIBLE RECIPIENTS.—A grant shall be award-
10 ed under this section only—

11 (1) to a local or State governmental entity re-
12 sponsible for providing school bus service to one or
13 more public school systems or responsible for the
14 purchase of school buses; or

15 (2) to a contracting entity that provides school
16 bus service to one or more public school systems, if
17 the grant application is submitted jointly with the
18 school system or systems which the buses will serve.

19 (e) TYPES OF GRANTS.—

20 (1) IN GENERAL.—Grants under this section
21 shall be for the demonstration and commercial appli-
22 cation of technologies to facilitate the use of alter-
23 native fuel school buses and ultra-low sulfur diesel
24 school buses in lieu of buses manufactured before



1 model year 1977 and diesel-powered buses manufac-
2 tured before model year 1991.

3 (2) NO ECONOMIC BENEFIT.—Other than the
4 receipt of the grant, a recipient of a grant under this
5 section may not receive any economic benefit in con-
6 nection with the receipt of the grant.

7 (3) PRIORITY OF GRANT APPLICATIONS.—The
8 Secretary shall give priority to awarding grants to
9 applicants who can demonstrate the use of alter-
10 native fuel buses and ultra-low sulfur diesel school
11 buses in lieu of buses manufactured before model
12 year 1977.

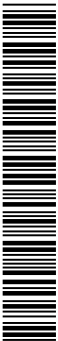
13 (f) CONDITIONS OF GRANT.—A grant provided under
14 this section shall include the following conditions:

15 (1) All buses acquired with funds provided
16 under the grant shall be operated as part of the
17 school bus fleet for which the grant was made for a
18 minimum of 5 years.

19 (2) Funds provided under the grant may only
20 be used—

21 (A) to pay the cost, except as provided in
22 paragraph (3), of new alternative fuel school
23 buses or ultra-low sulfur diesel school buses, in-
24 cluding State taxes and contract fees; and

25 (B) to provide—



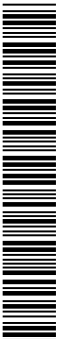
1 (i) up to 10 percent of the price of the
2 alternative fuel buses acquired, for nec-
3 essary alternative fuel infrastructure if the
4 infrastructure will only be available to the
5 grant recipient; and

6 (ii) up to 15 percent of the price of
7 the alternative fuel buses acquired, for nec-
8 essary alternative fuel infrastructure if the
9 infrastructure will be available to the grant
10 recipient and to other bus fleets.

11 (3) The grant recipient shall be required to pro-
12 vide at least the lesser of 15 percent of the total cost
13 of each bus received or \$15,000 per bus.

14 (4) In the case of a grant recipient receiving a
15 grant to demonstrate ultra-low sulfur diesel school
16 buses, the grant recipient shall be required to pro-
17 vide documentation to the satisfaction of the Sec-
18 retary that diesel fuel containing sulfur at not more
19 than 15 parts per million is available for carrying
20 out the purposes of the grant, and a commitment by
21 the applicant to use such fuel in carrying out the
22 purposes of the grant.

23 (g) BUSES.—Funding under a grant made under this
24 section may be used to demonstrate the use only of new



1 alternative fuel school buses or ultra-low sulfur diesel
2 school buses—

3 (1) with a gross vehicle weight of greater than
4 14,000 pounds;

5 (2) that are powered by a heavy duty engine;

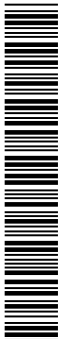
6 (3) that, in the case of alternative fuel school
7 buses manufactured in model years 2003 through
8 2006, emit not more than 1.8 grams per brake
9 horsepower-hour of nonmethane hydrocarbons and
10 oxides of nitrogen and .01 grams per brake horse-
11 power-hour of particulate matter; and

12 (4) that, in the case of ultra-low sulfur diesel
13 school buses, emit not more than—

14 (A) for buses manufactured in model year
15 2003, 3.0 grams per brake horsepower-hour of
16 oxides of nitrogen and .01 grams per brake
17 horsepower-hour of particulate matter; and

18 (B) for buses manufactured in model years
19 2004 through 2006, 2.5 grams per brake horse-
20 power-hour of nonmethane hydrocarbons and
21 oxides of nitrogen and .01 grams per brake
22 horsepower-hour of particulate matter,

23 except that under no circumstances shall buses be
24 acquired under this section that emit nonmethane
25 hydrocarbons, oxides of nitrogen, or particulate mat-

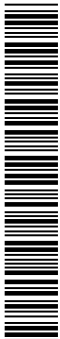


1 ter at a rate greater than the best performing tech-
2 nology of the same class of ultra-low sulfur diesel
3 school buses commercially available at the time the
4 grant is made.

5 (h) DEPLOYMENT AND DISTRIBUTION.—The Sec-
6 retary shall seek to the maximum extent practicable to
7 achieve nationwide deployment of alternative fuel school
8 buses and ultra-low sulfur diesel school buses through the
9 program under this section, and shall ensure a broad geo-
10 graphic distribution of grant awards, with a goal of no
11 State receiving more than 10 percent of the grant funding
12 made available under this section for a fiscal year.

13 (i) LIMIT ON FUNDING.—The Secretary shall provide
14 not less than 20 percent and not more than 25 percent
15 of the grant funding made available under this section for
16 any fiscal year for the acquisition of ultra-low sulfur diesel
17 school buses.

18 (j) ANNUAL REPORT.—Not later than January 31 of
19 each year, the Secretary of Energy shall provide a report
20 evaluating implementation of the program under this title
21 to the Congress. Such report shall include the total num-
22 ber of grant applications received, the number and types
23 of alternative fuel buses and ultra-low sulfur diesel school
24 buses requested in grant applications, a list of grants
25 awarded and the criteria used to select the grant recipi-



1 ents, certified engine emission levels of all buses purchased
2 under the program, and any other information the Sec-
3 retary considers appropriate.

4 (k) DEFINITIONS.—For purposes of this section—

5 (1) the term “alternative fuel school bus”
6 means a bus powered substantially by electricity (in-
7 cluding electricity supplied by a fuel cell), or by liq-
8 uefied natural gas, compressed natural gas, liquefied
9 petroleum gas, hydrogen, propane, or methanol or
10 ethanol at no less than 85 percent by volume; and

11 (2) the term “ultra-low sulfur diesel school
12 bus” means a school bus powered by diesel fuel
13 which contains sulfur at not more than 15 parts per
14 million.

15 **SEC. 302. FUEL CELL BUS DEVELOPMENT AND DEM-**
16 **ONSTRATION PROGRAM.**

17 (a) ESTABLISHMENT OF PROGRAM.—The Secretary
18 shall establish a program for entering into cooperative
19 agreements with private sector fuel cell bus developers for
20 the development of fuel cell-powered school buses, and
21 subsequently with not less than 2 units of local govern-
22 ment using natural gas-powered school buses and such
23 private sector fuel cell bus developers to demonstrate the
24 use of fuel cell-powered school buses.



1 (b) COST SHARING.—The non-Federal contribution
2 for activities funded under this section shall be not less
3 than—

4 (1) 20 percent for fuel infrastructure develop-
5 ment activities; and

6 (2) 50 percent for demonstration activities and
7 for development activities not described in paragraph
8 (1).

9 (c) FUNDING.—No more than \$25,000,000 of the
10 amounts authorized under section 303 may be used for
11 carrying out this section for the period encompassing fis-
12 cal years 2004 through 2006.

13 (d) REPORTS TO CONGRESS.—Not later than 3 years
14 after the date of the enactment of this Act, and not later
15 than October 1, 2006, the Secretary shall transmit to the
16 Congress a report that—

17 (1) evaluates the process of converting natural
18 gas infrastructure to accommodate fuel cell-powered
19 school buses; and

20 (2) assesses the results of the development and
21 demonstration program under this section.

22 **SEC. 303. AUTHORIZATION OF APPROPRIATIONS.**

23 There are authorized to be appropriated to the Sec-
24 retary for carrying out this title, to remain available until
25 expended—



- 1 (1) \$60,000,000 for fiscal year 2003;
- 2 (2) \$70,000,000 for fiscal year 2004;
- 3 (3) \$80,000,000 for fiscal year 2005; and
- 4 (4) \$90,000,000 for fiscal year 2006.

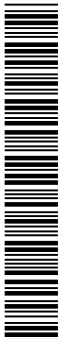
5 **TITLE IV—ALTERNATIVE**
6 **FUELED AND ADVANCED VE-**
7 **HICLES**

8 **SEC. 401. DEFINITIONS.**

9 For the purposes of this title, the following defini-
10 tions apply:

11 (1) **ALTERNATIVE FUELED VEHICLE.**—The
12 term “alternative fueled vehicle” means a vehicle
13 propelled solely on an alternative fuel as defined in
14 section 301 of the Energy Policy Act (42 U.S.C.
15 13211), except the term does not include any vehicle
16 that the Secretary determines, by rule, does not
17 yield substantial environmental benefits over a vehi-
18 cle operating solely on gasoline or diesel derived
19 from fossil fuels.

20 (2) **FUEL CELL VEHICLE.**—The term “fuel cell
21 vehicle” means a vehicle propelled by one or more
22 cells that convert chemical energy directly into elec-
23 tricity by combining oxygen with hydrogen fuel
24 which is stored on board the vehicle in any form and
25 may or may not require reformation prior to use.



1 (3) HYBRID VEHICLE.—The term “hybrid vehi-
2 cle” means a medium or heavy duty vehicle propelled
3 by an internal combustion engine using any combus-
4 tible fuel and an onboard rechargeable battery stor-
5 age system.

6 (4) NEIGHBORHOOD ELECTRIC VEHICLE.—The
7 term “neighborhood electric vehicle” means a motor
8 vehicle that qualifies as both—

9 (A) a low-speed vehicle, as such term is de-
10 fined in section 571.3(b) of title 49, Code of
11 Federal Regulations; and

12 (B) a zero-emission vehicle, as such term is
13 defined in section 86.1702–99 of title 40, Code
14 of Federal Regulations.

15 (5) PILOT PROGRAM.—The term “pilot pro-
16 gram” means the competitive grant program estab-
17 lished under section 402.

18 (6) ULTRA-LOW SULFUR DIESEL VEHICLE.—
19 The term “ultra-low sulfur diesel vehicle” means a
20 vehicle manufactured in model years 2004 through
21 2006 powered by a heavy-duty diesel engine that—

22 (A) is fueled by diesel fuel which contains
23 sulfur at not more than 15 parts per million;
24 and

25 (B) emits not more than the lesser of—



1 (i) for vehicles manufactured in—

2 (I) model year 2003, 3.0 grams
3 per brake horsepower-hour of oxides
4 of nitrogen and .01 grams per brake
5 horsepower-hour of particulate matter;
6 and

7 (II) model years 2004 through
8 2006, 2.5 grams per brake horse-
9 power-hour of nonmethane hydro-
10 carbons and oxides of nitrogen and
11 .01 grams per brake horsepower-hour
12 of particulate matter; or

13 (ii) the emissions of nonmethane hy-
14 drocarbons, oxides of nitrogen, and partic-
15 ulate matter of the best performing tech-
16 nology of ultra-low sulfur diesel vehicles of
17 the same class and application that are
18 commercially available.

19 **SEC. 402. PILOT PROGRAM.**

20 (a) ESTABLISHMENT.—The Secretary shall establish
21 a competitive grant pilot program, to be administered
22 through the Clean Cities Program of the Department of
23 Energy, to provide not more than 15 geographically dis-
24 persed project grants to State governments, local govern-
25 ments, or metropolitan transportation authorities to carry



1 out a project or projects for the purposes described in sub-
2 section (b).

3 (b) GRANT PURPOSES.—Grants under this section
4 may be used for the following purposes:

5 (1) The acquisition of alternative fueled vehicles
6 or fuel cell vehicles, including—

7 (A) passenger vehicles including neighbor-
8 hood electric vehicles; and

9 (B) motorized two-wheel bicycles, scooters,
10 or other vehicles for use by law enforcement
11 personnel or other State or local government or
12 metropolitan transportation authority employ-
13 ees.

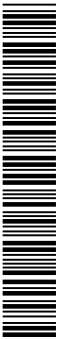
14 (2) The acquisition of alternative fueled vehi-
15 cles, hybrid vehicles, or fuel cell vehicles, including—

16 (A) buses used for public transportation or
17 transportation to and from schools;

18 (B) delivery vehicles for goods or services;
19 and

20 (C) ground support vehicles at public air-
21 ports, including vehicles to carry baggage or
22 push airplanes away from terminal gates.

23 (3) The acquisition of ultra-low sulfur diesel ve-
24 hicles.



1 (4) Infrastructure necessary to directly support
2 an alternative fueled vehicle, fuel cell vehicle, or hy-
3 brid vehicle project funded by the grant, including
4 fueling and other support equipment.

5 (5) Operation and maintenance of vehicles, in-
6 frastructure, and equipment acquired as part of a
7 project funded by the grant.

8 (c) APPLICATIONS.—

9 (1) REQUIREMENTS.—The Secretary shall issue
10 requirements for applying for grants under the pilot
11 program. At a minimum, the Secretary shall require
12 that applications be submitted by the head of a
13 State or local government or a metropolitan trans-
14 portation authority, or any combination thereof, and
15 a registered participant in the Clean Cities Program
16 of the Department of Energy, and shall include—

17 (A) at least one project to enable pas-
18 sengers or goods to be transferred directly from
19 vehicles acquired under this section to a local,
20 regional, or national transportation system;

21 (B) a description of the projects proposed
22 in the application, including how they meet the
23 requirements of this title;



1 (C) an estimate of the ridership or degree
2 of use of the projects proposed in the applica-
3 tion;

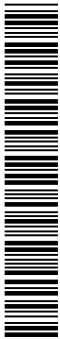
4 (D) an estimate of the air pollution emis-
5 sions reduced and fossil fuel displaced as a re-
6 sult of the projects proposed in the application,
7 and a plan to collect and disseminate environ-
8 mental data, related to the projects to be fund-
9 ed under the grant, over the life of the projects;

10 (E) a description of how the projects pro-
11 posed in the application will be sustainable
12 without Federal assistance after the completion
13 of the term of the grant;

14 (F) a complete description of the costs of
15 each project proposed in the application, includ-
16 ing acquisition, construction, operation, and
17 maintenance costs over the expected life of the
18 project;

19 (G) a description of which costs of the
20 projects proposed in the application will be sup-
21 ported by Federal assistance under this title;
22 and

23 (H) documentation to the satisfaction of
24 the Secretary that diesel fuel containing sulfur
25 at not more than 15 parts per million is avail-



1 able for carrying out the projects, and a com-
2 mitment by the applicant to use such fuel in
3 carrying out the projects.

4 (2) PARTNERS.—An applicant under paragraph
5 (1) may carry out projects under the pilot program
6 in partnership with public and private entities.

7 (d) SELECTION CRITERIA.—In evaluating applica-
8 tions under the pilot program, the Secretary shall consider
9 each applicant's previous experience with similar projects
10 and shall give priority consideration to applications that—

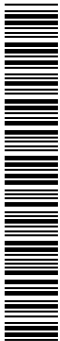
11 (1) are most likely to maximize protection of
12 the environment;

13 (2) demonstrate the greatest commitment on
14 the part of the applicant to ensure funding for the
15 proposed projects and the greatest likelihood that
16 each project proposed in the application will be
17 maintained or expanded after Federal assistance
18 under this title is completed; and

19 (3) exceed the minimum requirements of sub-
20 section (c)(1)(A).

21 (e) PILOT PROJECT REQUIREMENTS.—

22 (1) MAXIMUM AMOUNT.—The Secretary shall
23 not provide more than \$20,000,000 in Federal as-
24 sistance under the pilot program to any applicant.



1 (2) COST SHARING.—The Secretary shall not
2 provide more than 50 percent of the cost, incurred
3 during the period of the grant, of any project under
4 the pilot program.

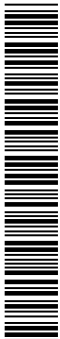
5 (3) MAXIMUM PERIOD OF GRANTS.—The Sec-
6 retary shall not fund any applicant under the pilot
7 program for more than 5 years.

8 (4) DEPLOYMENT AND DISTRIBUTION.—The
9 Secretary shall seek to the maximum extent prac-
10 ticable to ensure a broad geographic distribution of
11 project sites.

12 (5) TRANSFER OF INFORMATION AND KNOWL-
13 EDGE.—The Secretary shall establish mechanisms to
14 ensure that the information and knowledge gained
15 by participants in the pilot program are transferred
16 among the pilot program participants and to other
17 interested parties, including other applicants that
18 submitted applications.

19 (f) SCHEDULE.—

20 (1) PUBLICATION.—Not later than 3 months
21 after the date of the enactment of this Act, the Sec-
22 retary shall publish in the Federal Register, Com-
23 merce Business Daily, and elsewhere as appropriate,
24 a request for applications to undertake projects



1 under the pilot program. Applications shall be due
2 within 6 months of the publication of the notice.

3 (2) SELECTION.—Not later than 6 months after
4 the date by which applications for grants are due,
5 the Secretary shall select by competitive, peer review
6 all applications for projects to be awarded a grant
7 under the pilot program.

8 (g) LIMIT ON FUNDING.—The Secretary shall pro-
9 vide not less than 20 percent and not more than 25 per-
10 cent of the grant funding made available under this sec-
11 tion for the acquisition of ultra-low sulfur diesel vehicles.

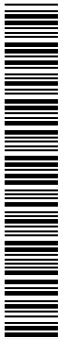
12 **SEC. 403. REPORTS TO CONGRESS.**

13 (a) INITIAL REPORT.—Not later than 2 months after
14 the date grants are awarded under this title, the Secretary
15 shall transmit to the Congress a report containing—

16 (1) an identification of the grant recipients and
17 a description of the projects to be funded;

18 (2) an identification of other applicants that
19 submitted applications for the pilot program; and

20 (3) a description of the mechanisms used by the
21 Secretary to ensure that the information and knowl-
22 edge gained by participants in the pilot program are
23 transferred among the pilot program participants
24 and to other interested parties, including other ap-
25 plicants that submitted applications.



1 (b) EVALUATION.—Not later than 3 years after the
2 date of the enactment of this Act, and annually thereafter
3 until the pilot program ends, the Secretary shall transmit
4 to the Congress a report containing an evaluation of the
5 effectiveness of the pilot program, including an assessment
6 of the benefits to the environment derived from the
7 projects included in the pilot program as well as an esti-
8 mate of the potential benefits to the environment to be
9 derived from widespread application of alternative fueled
10 vehicles and ultra-low sulfur diesel vehicles.

11 **SEC. 404. AUTHORIZATION OF APPROPRIATIONS.**

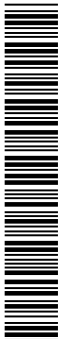
12 There are authorized to be appropriated to the Sec-
13 retary \$200,000,000 to carry out this title, to remain
14 available until expended.

15 **TITLE V—CLEAN COAL**

16 **SEC. 501. AUTHORIZATION OF APPROPRIATIONS.**

17 (a) CLEAN COAL POWER INITIATIVE.—Except as
18 provided in subsection (b), there are authorized to be ap-
19 propriated to the Secretary to carry out the activities au-
20 thorized by this title \$200,000,000 for each of the fiscal
21 years 2003 through 2011, to remain available until ex-
22 pended.

23 (b) LIMIT ON USE OF FUNDS.—Notwithstanding sub-
24 section (a), no funds may be used to carry out the activi-
25 ties authorized by this title after September 30, 2003, un-



1 less the Secretary has transmitted to the Committee on
2 Energy and Commerce and the Committee on Science of
3 the House of Representatives, and to the Senate, the re-
4 port required by this subsection and one month has
5 elapsed since that transmission. The report shall include,
6 with respect to subsection (a), a 10-year plan containing—

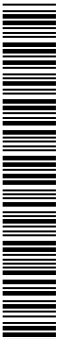
7 (1) a detailed assessment of whether the aggre-
8 gate funding levels provided under subsection (a) are
9 the appropriate funding levels for that program;

10 (2) a detailed description of how proposals will
11 be solicited and evaluated, including a list of all ac-
12 tivities expected to be undertaken;

13 (3) a detailed list of technical milestones for
14 each coal and related technology that will be pur-
15 sued; and

16 (4) a detailed description of how the program
17 will avoid problems enumerated in General Account-
18 ing Office reports on the Clean Coal Technology
19 Program, including problems that have resulted in
20 unspent funds and projects that failed either finan-
21 cially or scientifically.

22 (c) APPLICABILITY.—Subsection (b) shall not apply
23 to any project begun before September 30, 2003.



1 **SEC. 502. PROJECT CRITERIA.**

2 (a) IN GENERAL.—The Secretary shall not provide
3 funding under this title for any project that does not ad-
4 vance efficiency, environmental performance, and cost
5 competitiveness well beyond the level of technologies that
6 are in operation or have been demonstrated as of the date
7 of the enactment of this Act.

8 (b) TECHNICAL CRITERIA FOR CLEAN COAL POWER
9 INITIATIVE.—

10 (1) GASIFICATION.—(A) In allocating the funds
11 made available under section 501(a), the Secretary
12 shall ensure that at least 80 percent of the funds are
13 used only for projects on coal-based gasification
14 technologies, including gasification combined cycle,
15 gasification fuel cells, gasification coproduction, and
16 hybrid gasification/combustion.

17 (B) The Secretary shall set technical milestones
18 specifying emissions levels that coal gasification
19 projects must be designed to and reasonably ex-
20 pected to achieve. The milestones shall get more re-
21 strictive through the life of the program. The mile-
22 stones shall be designed to achieve by 2020 coal gas-
23 ification projects able—

24 (i) to remove 99 percent of sulfur dioxide;
25 (ii) to emit no more than .05 lbs of NO_x
26 per million BTU;



1 (iii) to achieve substantial reductions in
2 mercury emissions; and

3 (iv) to achieve a thermal efficiency of—
4 (I) 60 percent for coal of more than
5 9,000 Btu;

6 (II) 59 percent for coal of 7,000 to
7 9,000 Btu; and

8 (III) 57 percent for coal of less than
9 7,000 Btu.

10 (2) OTHER PROJECTS.—For projects not de-
11 scribed in paragraph (1), the Secretary shall set
12 technical milestones specifying emissions levels that
13 the projects must be designed to and reasonably ex-
14 pected to achieve. The milestones shall get more re-
15 strictive through the life of the program. The mile-
16 stones shall be designed to achieve by 2010 projects
17 able—

18 (A) to remove 97 percent of sulfur dioxide;

19 (B) to emit no more than .08 lbs of NOx
20 per million BTU;

21 (C) to achieve substantial reductions in
22 mercury emissions; and

23 (D) to achieve a thermal efficiency of—
24 (i) 45 percent for coal of more than
25 9,000 Btu;



1 (ii) 44 percent for coal of 7,000 to
2 9,000 Btu; and

3 (iii) 42 percent for coal of less than
4 7,000 Btu.

5 (3) CONSULTATION.—Before setting the tech-
6 nical milestones under paragraphs (1)(B) and (2),
7 the Secretary shall consult with the Administrator of
8 the Environmental Protection Agency and interested
9 entities, including coal producers, industries using
10 coal, organizations to promote coal or advanced coal
11 technologies, environmental organizations, and orga-
12 nizations representing workers.

13 (4) EXISTING UNITS.—In the case of projects
14 at existing units, in lieu of the thermal efficiency re-
15 quirements set forth in paragraph (1)(B)(iv) and
16 (2)(D), the projects shall be designed to achieve an
17 overall thermal design efficiency improvement com-
18 pared to the efficiency of the unit as operated, of not
19 less than—

20 (A) 7 percent for coal of more than 9,000
21 Btu;

22 (B) 6 percent for coal of 7,000 to 9,000
23 Btu; or

24 (C) 4 percent for coal of less than 7,000
25 Btu.



1 (5) PERMITTED USES.—In allocating funds
2 made available under section 501, the Secretary may
3 fund projects that include, as part of the project, the
4 separation and capture of carbon dioxide.

5 (c) FINANCIAL CRITERIA.—The Secretary shall not
6 provide a funding award under this title unless the recipi-
7 ent has documented to the satisfaction of the Secretary
8 that—

9 (1) the award recipient is financially viable
10 without the receipt of additional Federal funding;

11 (2) the recipient will provide sufficient informa-
12 tion to the Secretary for the Secretary to ensure
13 that the award funds are spent efficiently and effec-
14 tively; and

15 (3) a market exists for the technology being
16 demonstrated or applied, as evidenced by statements
17 of interest in writing from potential purchasers of
18 the technology.

19 (d) FINANCIAL ASSISTANCE.—The Secretary shall
20 provide financial assistance to projects that meet the re-
21 quirements of subsections (a), (b), and (c) and are likely
22 to—

23 (1) achieve overall cost reductions in the utiliza-
24 tion of coal to generate useful forms of energy;



1 (2) improve the competitiveness of coal among
2 various forms of energy in order to maintain a diver-
3 sity of fuel choices in the United States to meet elec-
4 tricity generation requirements; and

5 (3) demonstrate methods and equipment that
6 are applicable to 25 percent of the electricity gener-
7 ating facilities that use coal as the primary feedstock
8 as of the date of the enactment of this Act.

9 (e) FEDERAL SHARE.—The Federal share of the cost
10 of a coal or related technology project funded by the Sec-
11 retary shall not exceed 50 percent.

12 (f) APPLICABILITY.—No technology, or level of emis-
13 sion reduction, shall be treated as adequately dem-
14 onstrated for purposes of section 111 of the Clean Air Act,
15 achievable for purposes of section 169 of that Act, or
16 achievable in practice for purposes of section 171 of that
17 Act solely by reason of the use of such technology, or the
18 achievement of such emission reduction, by one or more
19 facilities receiving assistance under this title.

20 **SEC. 503. REPORT.**

21 Not later than 1 year after the date of the enactment
22 of this Act, and once every 2 years thereafter through
23 2011, the Secretary, in consultation with other appro-
24 priate Federal agencies, shall transmit to the Committee
25 on Energy and Commerce and the Committee on Science



1 of the House of Representatives, and to the Senate, a re-
2 port describing—

3 (1) the technical milestones set forth in section
4 502 and how those milestones ensure progress to-
5 ward meeting the requirements of subsections
6 (b)(1)(B) and (b)(2) of section 502; and

7 (2) the status of projects funded under this
8 title.

9 **SEC. 504. CLEAN COAL CENTERS OF EXCELLENCE.**

10 As part of the program authorized in section 501,
11 the Secretary shall award competitive, merit-based grants
12 to universities for the establishment of Centers of Excel-
13 lence for Energy Systems of the Future. The Secretary
14 shall provide grants to universities that can show the
15 greatest potential for advancing new clean coal tech-
16 nologies.

